AVIATION WEEK

AUG. 2, 1948

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Airplane Division

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Bendix Products

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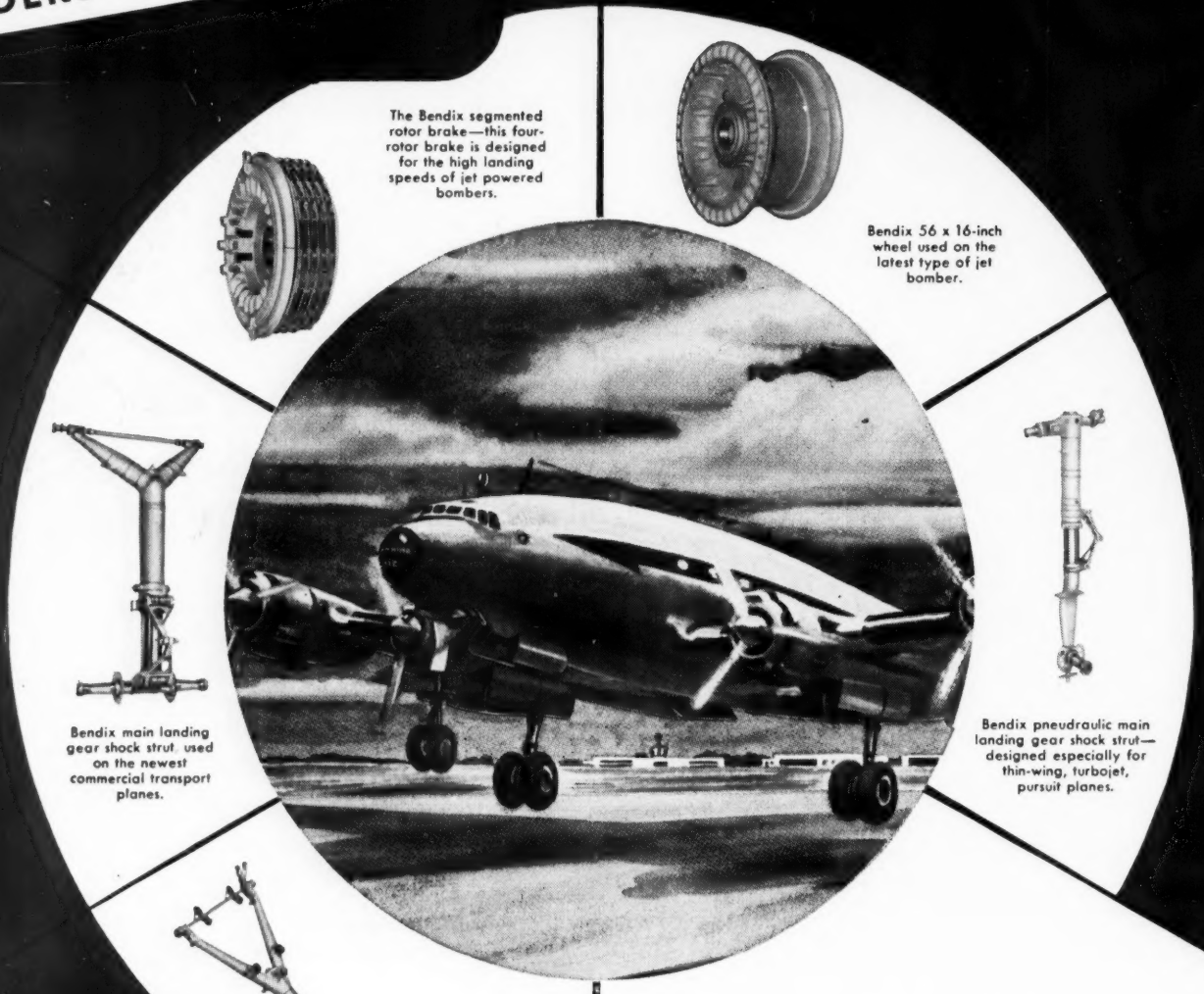

The Bendix segmented rotor brake—this four-rotor brake is designed for the high landing speeds of jet powered bombers.

Bendix 56 x 16-inch wheel used on the latest type of jet bomber.

Bendix main landing gear shock strut used on the newest commercial transport planes.

Bendix pneudraulic main landing gear shock strut—designed especially for thin-wing, turbojet, pursuit planes.

Bendix commercial transport nose strut, companion to the main landing shock strut shown above.

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You'll be off to a flying start when you plan your landing gear equipment with Bendix engineers. For Bendix has had many years' experience in the design and manufacture of the finest aircraft wheels, brakes, and struts. You can be positive that every element in your Bendix* landing gear equipment has been precision-built to meet minimum weight and space allowances. Leading plane manufacturers recognize these facts and are specifying Bendix as standard landing gear equipment. Whatever your landing gear problems, put it up to Bendix Products.

*REG. U. S. PAT. OFF.

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It's all part of the continuing program of Kidde research directed toward greater safety aloft. Through studies like this, we have collected a fund of information unmatched by any other private organization—information which is always at the disposal of government agencies, aircraft manufacturers and transport companies.

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Vol. 49, No. 5

AVIATION WEEK

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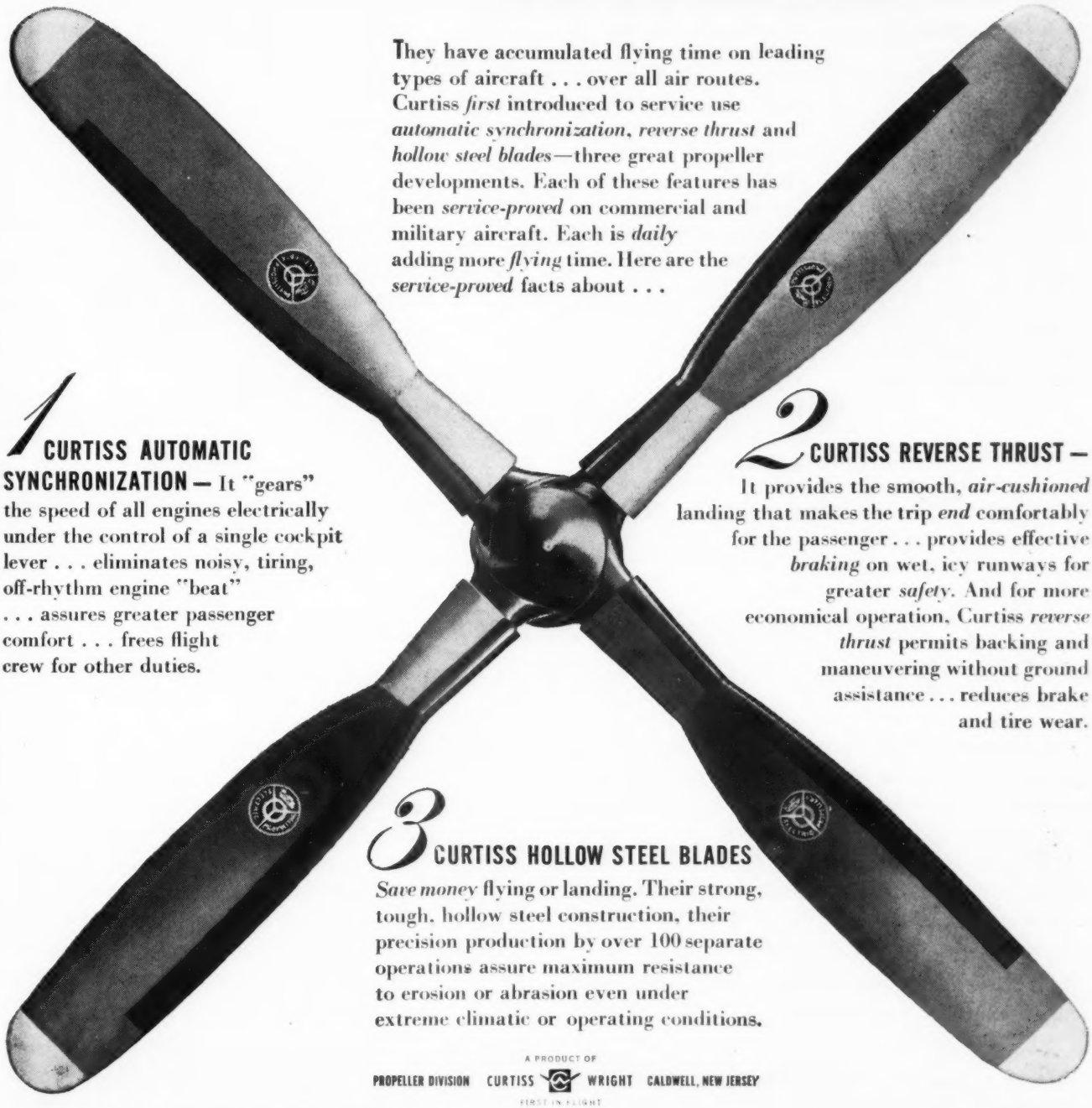
These Curtiss propeller features are *service-proved*



They have accumulated flying time on leading types of aircraft . . . over all air routes. Curtiss *first* introduced to service use *automatic synchronization*, *reverse thrust* and *hollow steel blades*—three great propeller developments. Each of these features has been *service-proved* on commercial and military aircraft. Each is *daily* adding more *flying* time. Here are the *service-proved* facts about . . .

1 CURTISS AUTOMATIC SYNCHRONIZATION — It "gears" the speed of all engines electrically under the control of a single cockpit lever . . . eliminates noisy, tiring, off-rhythm engine "beat" . . . assures greater passenger comfort . . . frees flight crew for other duties.

2 CURTISS REVERSE THRUST — It provides the smooth, *air-cushioned* landing that makes the trip *end* comfortably for the passenger . . . provides effective *braking* on wet, icy runways for greater *safety*. And for more economical operation, Curtiss *reverse thrust* permits backing and maneuvering without ground assistance . . . reduces brake and tire wear.

3 CURTISS HOLLOW STEEL BLADES

Save money flying or landing. Their strong, tough, hollow steel construction, their precision production by over 100 separate operations assure maximum resistance to erosion or abrasion even under extreme climatic or operating conditions.

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CURTISS ELECTRIC PROPELLERS

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This aviation know-how, teamed with top quality fuels and lubricants for every purpose, has earned an overwhelming airline preference for Texaco. In fact —

More revenue airline miles in the U. S. are flown with Texaco Aircraft Engine Oil than with any other brand.

Let Texaco Aviation Products and Lubrication Engineering Service help you improve efficiency and reduce your maintenance costs. Just call the nearest of the more than 2500 Texaco Wholesale Distributing Plants in the 48 States, or write The Texas Company, *Aviation Division*, 135 East 42nd Street, New York 17, N. Y.

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FOR THE AVIATION INDUSTRY

TUNE IN...TEXACO STAR THEATRE every Wednesday night featuring Gordon MacRae and Evelyn Knight...ABC Network

Berlin Airlift: Its Significance

Operation Vittles—The Allied airlift to Berlin—is both an impressive demonstration of the capabilities of aerial logistics and a glaring revelation of our deficiencies in air transport reserve strength.

The spectacle of an air lift leapfrogging a 250 mile land and sea blockade to supply a city of 2,500,000 people is impressive. Gen. Lucius Clay, American commander in Germany, says it has impressed the Germans far more than the Russian blockade that inspired it. He also says the Russians never counted on air supply being capable of sustained tonnage delivery anywhere nearly sufficient to supply the Allied sectors of Berlin. Indications of just how much the Russians are impressed and chagrined over the Berlin airlift come in the ever increasing volume of their fulminations against it.

Much With Little

Here are the cold statistics. In its first 30 days of operation—June 26-July 26—Operation Vittles has winged 70,000 tons of food and coal into Berlin. The airlift is now approaching a 2000 ton daily level. All of this has been done with a ragtag, hastily thrown together fleet of Douglas C-47s, supplemented by 50 Douglas C-54s; ten Sunderland flying boats and a few Avro York transports.

The joint RAF-USAF operation has cost approximately $7,000,000 for this period. Much of the flying has been done in bad weather. The old reliable of the military for bad-weather landings—GCA—has been operating at both Gatow and Templehof airdromes in Berlin and Rhein/Main near Frankfurt.

Gen. Clay has indicated that the airlift can and will continue throughout the winter if necessary. His words have been backed by construction of another airdrome at Spandau in Berlin and immediate replacement of the tired old C-47s by a fleet of about 150 C-54s. The first 20 C-54 replacements are already on their way with at least 60 more scheduled to reach Frankfurt before the end of the week.

Clay estimates that the C-54s will bring the Berlin deliveries up to a 4500 ton per day level. This will be sufficient to provide all the food required and enough coal to maintain a bare minimum of industry and power.

Background of Power

Even as Clay outlined his plans in the Pentagon to a room jammed with press and radiomen, the roar of four engined transports still under climb power after takeoff from Washington National Airport underscored his promises. Clay impressed an audience not inclined to easy impression by military brass. His slight trim figure, a willingness to give a straightforward answer to any question no matter how blunt or embarrassing and a firm command of the facts involved indicated a man who knows what he is doing. It is evident that Clay and his Air Force commander Curtis Lemay make a good team.

There is little basis for comparison of the Berlin airlift with the wartime Hump operation to China, except that both were the result of a land and sea blockade and a last ditch attempt to maintain a vital line of communications that would have been lost without the air. The Hump was a 500 mile haul over terrible terrain and through worse weather. It eventually built up to a 70,000-ton month using 600 transports and nearly 30,000 men. In one spectacular day specially arranged by Maj. Gen. Tunner, now deputy commander of MATS, the Hump dumped 5327 tons in China during one 24 hr. period that included 1118 round trips.

Ghostly Potential

The value of the Berlin airlift has been in the time it gives Allied diplomats to work out a solution to the Russian problem. Without it a quick decision to withdraw from Berlin or force a military showdown would have been required. In addition it has demonstrated to the Berliners as well as the rest of Europe that once-familiar might of American airpower is not a ghost beyond recall.

However it is the ghostliness of the American air transport potential that must give serious concern to the logistical planners responsible for the present state of military air transport. Why was Clay left to face the blockade with troop carrier squadrons equipped with obsolete C-47s? Why is the military so hard pressed to scrape up the extra 150 C-54s now required? Why must the resources of civilian contract carriers be requisitioned to provide the logistical support required for the transport fleet in Germany? The answer seems to be that there is no adequate transport reserve on which to draw to meet emergencies such as this.

Even the reserve that does exist is hardly being fully utilized. MATS seems tied down by its scheduled airline type of philosophy. Little consideration apparently has been given to throwing VR-2, the Navy Mars flying boat squadron into the breach. The three Mars now available could dump 150 tons a day onto Berlin lake shores—nearly 10 percent of the present deliveries—without any added strain on airport facilities.

The Air Force recently froze a large quantity of C-46 surplus transports. The bulk of these C-46s are on lease to private operators while the troop carrier squadrons in Germany staggered along with C-47s capable of carrying half the payload 20 to 30 mph. slower.

The Case for Transport

Once again the top Air Force planners seem to have concentrated almost exclusively on combat type aircraft and sadly neglected the airlift required to back up the combat units and give them the mobility required to utilize the full potential of airpower. It is apparent that it still takes a major crisis to convince some people that air transport is as much part of our airpower potential as bombers and fighters.

It is apparent that there are some people who do not recognize this fact despite the wartime record of air transport in bailing Stilwell out of the Burma jungles; keeping China in the war; supplying the armored columns of Patton racing through France and carrying the occupation forces to Japan.

The major lesson of the Berlin airlift is that while we can do an impressive job with obsolete equipment it behooves us to organize and integrate a proper military air transport system and reserve that is both large enough, well equipped and sufficiently flexible to swing into immediate action when the emergencies that are bound to arise in the future confront us.

You've got to be GOOD to fly in the new THUNDERJETS!

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REPUBLIC AVIATION CORPORATION

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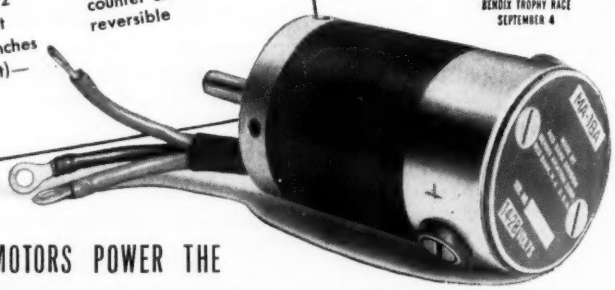
Input voltage—14 or 28 volts D.C.
Speed—6,000 R.P.M.
Torque—4 ounce inches
Horsepower—.022
Duty—Intermittent
Diameter—1⅝ inches
Length (less shaft)—2⅜ inches
Standard shaft length—1⅛ inches
Standard shaft diameter—¼ inch
Rotation—Clock, counter-clock, or reversible



BENDIX TROPHY RACE
SEPTEMBER 4

BENDIX DC MOTORS POWER THE
TRIM-TAB ACTUATORS IN THE REPUBLIC F-84 "THUNDERJET"

Manufacturers of the Rotorac*, the complete actuator—Airborne Accessories Corporation, Hillside, N. J., chose this tiny Bendix motor for small size, light weight, power and dependability.

This is but one of the new MA Series of Bendix Motors designed for many aircraft uses—trim-tab actuators, fuel valve actuators, band-change switching in radio equipment, stall-warning devices—in short, for dozens of aircraft applications requiring small D.C. motors.

Read the specifications above—then write today to our engineering department for its recommendations.

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OF BENDIX AVIATION CORPORATION
Red Bank, N. J.

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NEWS DIGEST

DOMESTIC

Secretary of Defense Forrestal has asked the joint Chiefs of Staff to study the feasibility of joint use of air bases by Air Force and Naval Aviation units. Both services now operate a number of air installations in the same states and plan to activate bases now in a standby status to accommodate new air units authorized by Congress.

TWA and the CIO Airline Communications Employes Association have reached an understanding in the wage dispute involving teletype and radio operators. Details of the agreement are still being worked out.

Federal Communications Commission last week heard testimony for and against regular stratovision services in the Pittsburgh area. Westinghouse Electric Corp., has been experimenting with high altitude relays of television signals in cooperation with the Glenn L. Martin Co. Some television stations and applicants in the area contend stratovision relays might seriously interfere with their ground transmissions.

Col. James M. Gillespie will receive the National Air Council award for his contributions during the past year in experimentation and research.

FINANCIAL

Republic Aviation Corp. reports net income in the six-month period to June 30 of $1,826,668 after taxes of $429,000. Sales were $27,138,207. Backlog of Air Force orders totals $39,000,000.

Curtiss-Wright Corp.'s consolidated net income for six months ended June 30 amounted to $26,081,367, including $606,000 resulting from retroactive price increases in 1947. Sales aggregated $49,716,997. . . . Company declared $5.00 dividend payable Aug. 23 to holders of record Aug. 9, and a $5.00 per share payable Nov. 30 to holders of record Nov. 15.

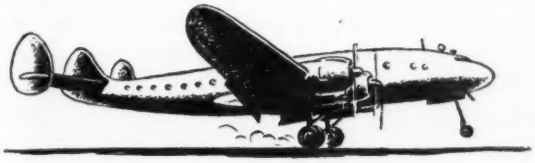
FOREIGN

Steadily increasing volume of international air travel was reflected during May in the record $8,474,000 turnover of airline traffic transactions reported by the International Air Transport Association Clearing House. Previous peak of $7,900,000 was registered in September, 1947.

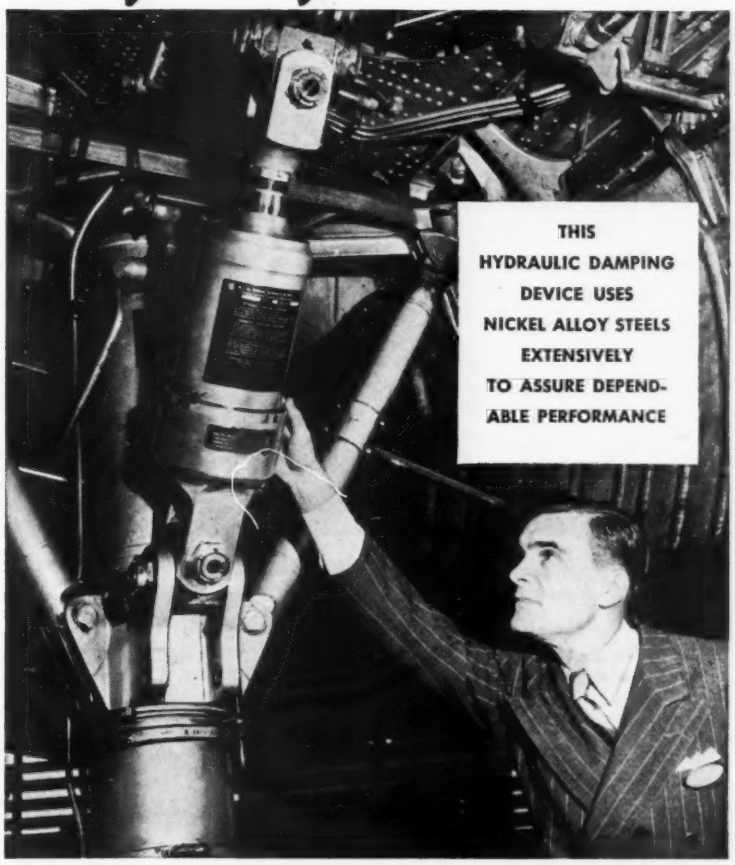
Plans are nearing completion for establishment of new air service between the Philippines and India. The two governments will soon start negotiations on landing rights.

Aero O/Y, Finnish airline, has started a twice weekly service between Helsinki and Amsterdam via Norrkoping and Copenhagen.

Lockheed Damping Device



...Designed to Reduce Landing Gear Accidents



An independent, continuing study of landing gear problems, undertaken by Lockheed Aircraft Corporation, indicates that even normal landings may develop loads in excess of design values.

The deduced cause? Dynamic overloading of landing gear, occurring in about 1/10 second, when runway is touched and wheels accelerate from zero to ground speed of the plane. Moreover, resonant vibration caused by uneven runway surfaces, and skids on wet runways may also create excessive dynamic loads.

The illustration, shows Lockheed's answer: *a hydraulic damping device.*

Replacing the former rigid brace, it allows main landing gear wheels a rearward motion of about 6 inches from the normal forward position. Actual use confirmed the basic correctness of this development.

Approved by the CAA for installation on commercial Constellations, this landing gear comprises vital parts made from nickel alloyed steels that include Types 4340, A-8740, A-8640, and A-8630 to provide extra margins of resistance to stress.

Where safety and dependability come first, specify nickel alloy steels. We invite consultation.

TEST DUPLICATES ACTUAL LANDING CONDITIONS

Designed and built by Lockheed Aircraft Corporation, Burbank, Calif., this tester virtually duplicates actual landing conditions and permits measuring and recording impacts encountered when a plane "sets down."

In normal landings, wheels gather speed from a dead stop to 100 m.p.h. in one tenth of a second or less. On this Lockheed tester, wheels are spun in reverse at 100 m.p.h., then dropped upon a concrete platform mounted on flexible steel bars. Strain gages fixed on these bars measure both horizontal and vertical loads, and they are recorded photographically.

EMBLEM OF INCO SERVICE

Over the years, International Nickel has accumulated a fund of useful information on the properties, treatment, fabrication and performance of engineering alloy steels, stainless steels, cast irons, brasses, bronzes, nickel silver, cupro-nickel and other alloys containing nickel. This information is yours for the asking. Write for "List A" of available publications.

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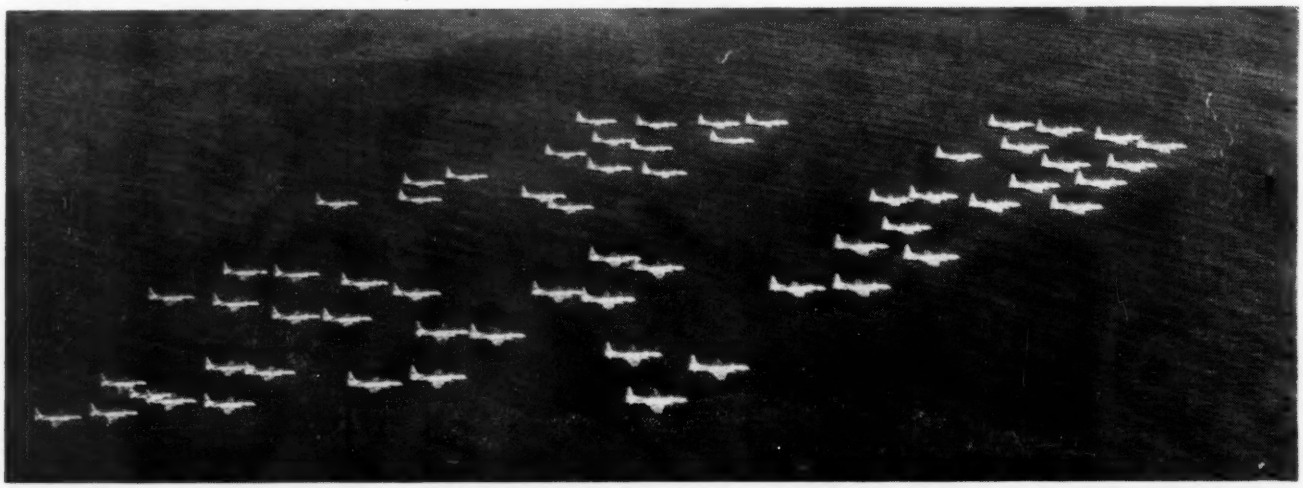
Vol. 49, No. 5

AVIATION WEEK

August 2, 1948



Largest group of U. S. jets ever photographed, 62 F-80s in formation off Panama before heading for Europe aboard Navy carrier.

U. S. Airpower Flowing Back to Europe

Planes, not ships, being rushed overseas to support touchy foreign negotiations.

By Robert Hotz

American airpower was being siphoned back into Europe last week in an apparent attempt to back the Allied airlift to Berlin with a show of potential force.

Observers regarded it as highly significant that as the gravity of the European situation increased airpower was employed to back the Allied diplomatic hand rather than more of the Navy warships that have been playing diplomatic firemen in the hotspots of the post-war world.

▶**Five Groups Overseas** – Five of the USAF's 13 B-29 bomb groups were based at advanced foreign staging fields last week. Two Boeing B-29 groups of 30 bombers each arrived in England after highly publicized flights from their home bases at Salina, Kas. and Tampa, Fla. These groups were ready for action in Europe approximately 24 hours after taking off from their American bases. Ground crews followed the bombers in a dozen C-54 transports under charter from Alaska and Transocean Airlines.

These groups are not equipped with atomic bombs. The bombs are in the United States–24 hours away by air transport and in the custody of the Atomic Energy Commission. Special Presidential approval is required for release of atomic bombs from the Commission to military units.

These 60 B-29s joined another group of Superfortresses already under USAF European Air Commander, Lieut. Gen. Curtis Emerson Lemay to bring his bomber strength to 90 B-29s. Under Lemay's command B-29s have been conducting extensive operational practice including simulated bombing missions against England, the Suez Canal and Helgoland and shuttle flights to Daharan, Arabia.

▶**More Movements Planned**–Less publicized are the two B-29 groups on Okinawa with a total strength of 60 planes. One group is permanently stationed with the USAF in the Japan area while the second is on a "routine training mission."

Strategic Air Command which dispatches the B-29s to foreign fields says that further "routine training missions" are planned. There is little doubt that the "training missions" have now become a build-up of air strength in critical areas since "routine" procedure calls for one group to return to the United States shortly after another arrives in a foreign theater of operations.

Meanwhile Strategic Air Command took delivery on three more Convair B-36As, to bring its total of the giant long range bombers in service to eight. They are assigned to the 7th Bomb Group of the 8th Air Force at Fort Worth. At full strength the 7th Group will have 18 B-36As. Strategic Air Command has accepted only four Boeing B-50s, scheduled to replace the B-29 in SAC's medium bomb groups.

Remainder of the B-50s made by Boeing have been held in Seattle for modifications.

▶**Jet Fighter Ferry**–Feasibility of speedy ferrying of jet fighters across the Atlantic was demonstrated by crossing of six RAF Vampires westward to the United States and 16 Lockheed F-80s eastward to Scotland and Germany. Both flights were delayed considerably while adequate supplies of jet fuel were stocked at intermediate stops including Goose Bay, BW-1 in Greenland, Iceland and Stornaway, Scotland.

Indications of the slim margins still confronting jet fighters on long overwater operations came in the arrival of the RAF Vampires at Goose Bay with only 8 minutes fuel in their tanks after a 2 hr. 55 min. crossing of the 1200 mile stretch from Greenland.

The F-80s completed the 5000 mile trip from Selfridge Field, Mich., to Fuerstenfeldbruck, Germany in 12½ hours flying time. Vampires cruised at

400 mph. during their trans-Atlantic crossing.

A full group of 75 F-80s left Panama last week aboard the Navy carrier Sicily for permanent duty in Germany where they will replace an F-47 group.

▶**Comparative Strength**—Total strength in the European theater is now 90 B-29s and 16 F-80 jet fighters plus 75 F-47 reciprocating fighters with another 75 jets on the way. This in itself is not a formidable force.

Combined with the all-jet Fighter Command of the RAF plus the additional eight B-29 groups available in the United States on 24 hour notice, it is a sufficient airpower to make any opponent think twice about tackling it. Facing the allied air force in Europe is a Russian Air Force which U. S. observers estimate at about 700 first line fighters and between 200 and 300 heavy bombers. USAF has about 600 additional jet fighters in the United States.

Canadian Crash

Rimouski Airlines DC-3 crash last week killing 29 persons was the worst in the history of Canadian aviation. The accident occurred while the plane was making a routine 50-mile flight across the Gulf of St. Lawrence.

Air Force to Boost B-49 Orders

Northrop gives Convair subcontract in one of many moves to spread military work throughout industry.

Plans for quantity production of the Northrop jet Flying Wing were revealed last week in an unusual peacetime subcontract agreement with Consolidated Vultee Aircraft Corp. This indicates emergence of the Flying Wing as a major weapon in the Air Force strategic arsenal.

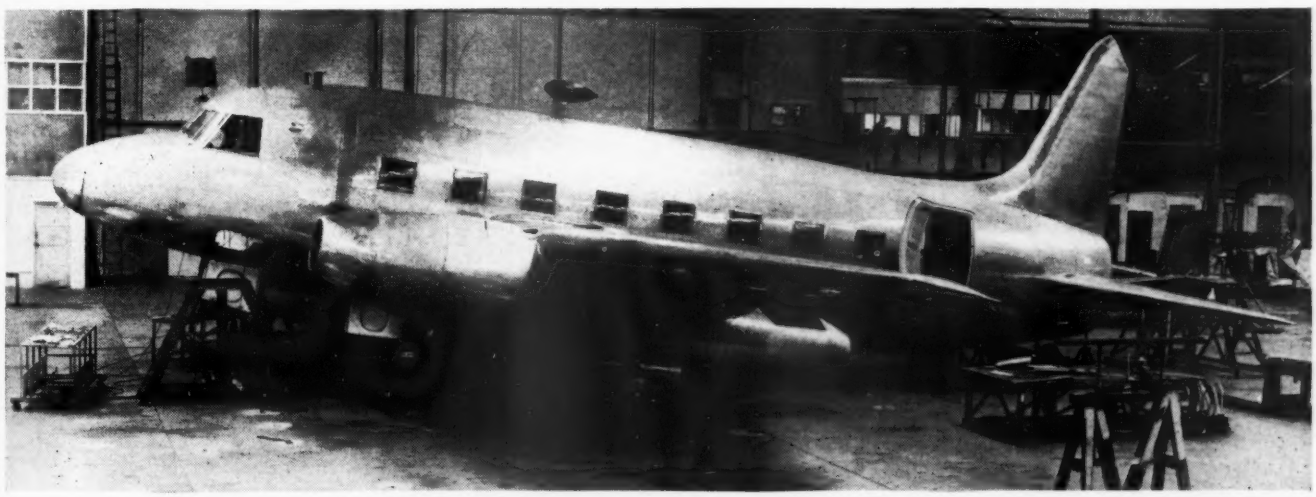
Although current Air Force commitment for the B-49A is only 30 aircraft, a sharp increase is scheduled in fiscal 1950 with studies already completed to produce groups of 100, 200 and 500 of the type.

Approval of the subcontract agreement is first manifestation of the Air Force's announced policy of distributing major subcontracts to airframe manufacturers not otherwise sharing substantially in the fiscal 1949 aircraft procurement program. Convair did not receive an award in the new program and is currently producing only the B-36A bomber, commercial Convair-Liner and L-13 liaison plane. Experimental contracts include the Skate and P5Y for the Navy and the XP-92 supersonic fighter for the Air Force.

▶**Higher Priority**—The Northrup jet bomber has received a considerably higher priority than had first been allocated.

Northrop's productive capacity of only three bombers per month at its Hawthorne, Calif., facilities cannot meet the acceleration of the program desired by the Air Force. The Convair Fort Worth plant, containing two million square feet, is currently engaged in the Convair B-36A production program to which only about 70 percent of the facility is devoted. Plans have already been completed for a rearrangement of the plant to compress the B-36 production to about 50 percent to make room for the B-49 assembly line.

Northrop Aircraft will maintain complete technical cognizance of the program including all design, production and tooling engineering and will receive compensation from the Air Force for this portion of the program. Convair



TURBOJET AIRLINER

First civil airliner to use turbojet power, the Vickers-Armstrong Viking, powered by two Rolls-Royce Nene engines, is shown undergoing modification at the manufacture's Weybridge factory. Craft was first flight tested Apr. 6. Tests at that time disclosed the fact that several modifications would be necessary before the Viking is practicable as a regular civil airliner. Nene engines are each capable of developing 5000 lb. static thrust. Company plans to exhibit the craft at the Society of British Aircraft Constructors show at Farnborough in September. The Viking is normally powered by two Bristol Hercules radial piston engines. Use of the Nene's engines is a Ministry of Supply experimental project.

will provide fabrication and assembly equipment, personnel and manufacturing management.

▶ **B-36 Production**—The Convair B-36A production program will not be affected in any way by the new Flying Wing addition to its Fort Worth production line. The Air Force commitment for 95 airplanes is now definitely and finally firm with the last airplane scheduled for completion in November, 1949. The B-49 program for the original 30 aircraft is scheduled to be underway on a one-a-week basis at that time.

Meanwhile, fiscal 1950 money will be available July 1, 1949 with which to increase the B-49 order to 130, 230 or 530 aircraft, depending on the international situation.

Quantity production of the Northrop Flying Wing is a vindication for the design pioneered by John K. Northrop over some 25 years of effort. Original production order for the configuration was for two XB-35 and 13 YB-35 propeller-driven types. Engineering studies early in the program indicated the practicality and benefit of turbojet engine installations in the bomber. The contract was revised to include two YB-49 jet-driven Wings plus 11 propeller-driven types. Both YB-49 prototypes successfully completed early test flights although one of the type crashed and was destroyed in the Mojave Desert June 5.

▶ **High Performance**—Startling performance of the B-49 version, which exceeded USAF expectations and fully displayed the potentialities of the design after more than a year of power plant difficulties with the propeller-driven XB-35 type, is the principal reason for the greatly increased Air Force interest. Yb-49 ability to maintain a cruising speed of 400 mph. on only four engines minimizes the high fuel consumption of the turbojet engine in comparison with reciprocating engine bombers. The YB-49 has demonstrated its ability to remain aloft for 9 hours or more, giving it a range of nearly 4000 miles. Top speeds have been recorded in excess of 500 mph.

Photographic, reconnaissance, and strategic bombardment versions may readily be made available by minor changes in installations, provisions for which are in each airplane. Propeller-driven versions powered by compound and turboprop engines offer extremely long-range characteristics suitable for intercontinental bombardment.

▶ **Other Developments**—Other subcontracting developments last week included the award of a subcontract to Douglas Aircraft Co. for the fabrication of Boeing B-50 fuselage assemblies. This work will be done at the Santa Monica plant where DC-6 production is slated to taper off later this year.

The Boeing B-50 program is currently the largest subcontracting activity in the business with contracts having been let by Boeing to Northrop, North American, Ryan, Cessna and Beech covering the production of tail surfaces, engine nacelles, wing flaps, wing tips, landing gear and other assemblies. Boeing President William E. Allen's policy is that subcontracts should go to old-line aviation firms to help them stay in business rather than to non-aviation firms. Curtiss-Wright Columbus is currently producing empennage assemblies for the Republic F-84 Thunderjet.

Meanwhile, Air Force slashed its anticipated airframe manufacturers modification programs. Neither the Glenn L. Martin Co. nor the Bell Aircraft Corp. will participate in the current Boeing B-29 modification program, as had previously been planned. Plans also had been formulated for airframe manufacturers to recondition and modify Republic F-47N and North American F-51H fighters now in storage.

This work, as well as the B-29 modification other than that currently in process at Boeing Wichita, will be done in Air Force overhaul bases "for security reasons". Overhaul of Douglas C-47 and C-54 transports will continue to be contracted to civilian overhaul and maintenance facilities.

Negotiations Reopen

Trustees of the Kellett Aircraft Corp. have been ordered to reopen negotiations with the Hughes Aircraft Co. by a Federal District Court in Philadelphia. Trustees recently ended negotiations with Hughes (AVIATION WEEK, July 26) when they concluded an agreement for reorganization of the Kellett Corp. with the Fairchild Airplane & Engine Co. The court extended the deadline for submitting reorganization plans until Aug. 16.

Both Hughes and Fairchild are interested in acquiring Kellett's experimental helicopter project—the XR-10, twin engine transport copter, and the XR-17, a "flying crane" jet copter. Kellett Corp. is in process of reorganization under Chapter X of the Bankruptcy Act.

SCALE MODEL OF AEROCAR

Recently tested at the University of Washington wind tunnel, the Aerocar (one-quarter scale model shown above) is still undergoing tests prior to construction of a prototype, scheduled for mid-winter. When completed, craft will be equipped with pusher type propeller, provision for cross-wind landings, battery starter generator and lights as standard equipment. The Aerocar is designed to be spin-proof, and Moulton B. Taylor, manager of Aerocar, Inc., estimates it will take one minute to convert from air to ground operation. Craft will sell for $3000-$4000. Other features include an unusual tail configuration.

First in-flight view of Lockheed TF-80C.

Flight Report on Jet Trainer

Carrying civilians for first time, Lockheed TF-80C gives new appreciation of jet performance in air.

ANDREWS FIELD, MD. – First civilians other than contractor personnel to ride in a jet fighter were given a demonstration here of the Lockheed TF-80C, with an AVIATION WEEK representative among the newsmen given a ride.

Piloted by veteran Lockheed test pilot Tony Levier, the trainer demonstrated its 600 mph. top speed, better than 6000 fpm. rate-of-climb, "hands-off" stability and rapid rate-of-roll in a series of 20-minute flights. The jet trainer gave civilians their first experience of the quiet, vibrationless and powerful turbojet engine and the high-speed, quick "G" build-up of the jet fighter.

▶**Trainer Handling** – Docility of the TF-80C makes it ideal as a jet transition trainer. Warning of its 120-mph. stall is given by ample buffeting. Its dive brakes may be lowered "hands off." Aileron rolls are straight ahead and executed without rudder or elevator movement. Engine acceleration is rapid and an aborted landing may be saved quickly by the fast-recovery of engine power coupled with the stability of the Lockheed-built airplane near the stall.

Engine operation has been greatly simplified through use of the new Bendix control which provides automatic altitude compensation, preventing turbine overspeed and malhandling of the throttle. The throttle may be slammed against either end of the quadrant with the speed control automatically accelerating or decelerating turbine rpm. at optimum rates.

▶**Bridges Gap**—The TF-80C eliminates the gap between reciprocating and jet engine experience and makes the transition from AT-6 to F-80C. New air training command syllabus will provide 170 hr. of primary, basic and advanced training (currently in the AT-6 but eventually in the new North American T-28) followed by a short period of dual instruction in the TF-80C. The student is then checked out for regular duty in a jet fighter squadron assignment.

The TF-80C is only a slightly modified F-80 fighter. Fuselage is 30 in. longer but the new plane is lighter, faster and has higher performance. Dual controls are provided. The bubble canopy is jettisonable. Ejector seats are used. Two .50-cal. machine guns are mounted in the nose for gunnery instruction and JATO units, bombs, rockets, etc. may be carried as regular equipment as in the standard fighter version of the F-80 series of planes.

Jet Flight

How does it feel to ride in a jet airplane? Last week, AVIATION WEEK *staff writer Robert McLaren, after flying in the TF-80C, reported:*

Take the noise and shake out of an airplane, double its top speed, give it a climb like a rocket and the ability to roll like a high-speed lathe and the civilian has a rough idea of riding a jet plane.

The jet fighter eliminates all of the objectionable features of the propeller-driven airplane, adds the qualities of the glider with the stability of the personal aircraft and wraps them up in a 600 mph. meteor that no exhilaration can match. The TF-80C failed all its preliminary tests as a man-killing ordeal and proved beyond a doubt that the passenger has a new world to look for in coming jet transports.

It disproved utterly the pre-flight conviction that really high-speed flight was a test of physical endurance and made this observer, at least, an addict that henceforth will regard the convention airplane as passe. Handling the controls at 400 mph. is a delicate operation that sends you slamming at 4 Gs without the practiced finesse of the jet fighter pilot.

USAF at Sea

Dozen Air Force pilots to train aboard carrier with naval aviators.

While top level Air Force generals and Navy admirals continue their feud over the future of strategic bombing, a dozen USAF pilots are preparing to go to sea and find out how Naval aviators operate.

Credit Lieut. Gen. Elwood R. (Pete) Quesada, Tactical Air commander, with the first attempt to make contact between the rival air services at the working level. Frequent criticism of the present Armed Forces unification system is that it provides inter-service contact only at top levels where military politics are apt to cloud the technical issues at stake. Until the present experiment there has been no method for interchange of service personnel between the Air Force and Naval Aviation at the practical working levels.

▶ **Quesada's Idea**—Quesada broke the ice last fall by inviting ten Navy and Marine pilots to fly in the joint paratrooper and Tactical Air Command maneuvers in Georgia. The Navy and Marine pilots flew F-80 jet fighters, F-51 Mustangs and A-26 bombers on bombing and strafing missions and participated in operational planning of 9th Air Force headquarters and the Tactical Air Command control group. This summer Quesada asked Atlantic Fleet Commander Admiral W. H. P. Blandy for permission to detail a dozen USAF pilots to his carrier force for fall maneuvers at sea. Navy gave full approval to the request.

Last week the dozen USAF pilots—a trio from each of the four major commands-Tactical; Strategic; Materiel and Air Defense—reported to Rear Admiral John W. Reeves, jr., chief of Naval air training at Pensacola to begin learning carrier landing and take-off techniques. Nine fighter pilots will then go to Quonset Point, R. I., for additional training with Naval aviators on carrier attack planes.

▶ **Fly Navy Types**—They will then fly Grumman Hellcats, Vought Corsairs and Martin Maulers off the carrier Leyte on a cruise to Cuba returning to Quonset in the fall in time to take part in the carrier operations of the Atlantic Fleet maneuvers. Three Strategic Air Command bomber pilots will be given training on Navy land based patrol bombers, which in all probability will be Lockheed Neptunes.

It is expected that this USAF participation in Navy carrier operations will be the beginning of a continuing interchange of operational personnel between the two air services.

Capt. Marshall B. Gurney

Navy Consolidates Its Transport Remains

Navy has consolidated its air transport remaining after the MATS merger into two Fleet Logistics Support Wings commanded by Capt. Marshall B. Gurney with headquarters at Moffett Field, Calif. Gurney was formerly chief of staff of the Naval Air Transport Service under the command of Rear Admiral John W. Reeves Jr.

Mission of the wings is to provide air lift on routes of sole interest to the Navy, ferry service for plane deliveries and special hospital evacuation duties.

▶ **Atlantic Wing**—Atlantic Wing headquarters are at Patuxent, Md. This wing includes two Navy aircraft ferrying squadrons at Norfolk and San Diego and a transport squadron (VR-1) that operates a feederline service between Atlantic coast Navy bases from Argentia, Newfoundland to Guantanamo Bay, Cuba.

Pacific Wing headquarters are at Moffett Field. This Wing includes VR-2, the Martin Mars squadron operating on the San Francisco-Hawaii run; VR-4, a heavy maintenance squadron at Moffett; VR-5 operating a Pacific Coast feederline from the Aleutians to Seattle; and VRU-1 at Honolulu, the Navy's special mission transport squadron.

▶ **Maintenance Pool**—The Wings also operate a plane commanders training school that furnishes personnel for the Navy contingent in MATS and a maintainence pool of 24 Douglas DC-4 types of which 15 are for MATS and nine for Wings. Six DC-4s are used in the training school. Other transport types operated by the Wings include 14 DC-4s; 5 Mars flying boats; 8 twin Beech (JRB); 1 Martin PBM-5 and 14 C-47s.

Navy contributed three if its transport squadrons to MATS. VR-3 operates special nonstop Washington, D. C.-San Francisco service for MATS Continental division. VR-6 and VR-8 in the Pacific division of MATS operate between Honolulu and Asia.

CAA Tries Again To Evict MATS

The Military Air Transport service is receiving increasingly blunt suggestions that it has overstayed its welcome at crowded Washington, D. C., National Airport.

B. H. Griffin, administrator of the CAA-operated field, has informed top government officials that military operations are seriously impeding expansion plans for Washington National. He warned that unless MATS moves out immediately it might be necessary to establish a civilian field at another location in the Washington area.

▶ **Wartime Agreement**—During the war, the Army Air Transport Command (recently merged into MATS) was granted permission to use facilities at Washington National for the duration plus six months, with the proviso that it not interfere with commercial operations at the field. The airport is now completing its postwar building program, which includes construction of five new commercial hangars. Washington National officials believe these new facilities cannot be utilized efficiently while military aircraft block the parking ramps.

MATS says it intends to move from Washington National to Andrews Field, Md. It explains the transfer is being held up until the Strategic Air Command shifts its headquarters from Andrews Field to its new operating base located in Omaha.

▶ **Reluctance Seen**—But there is some feeling that MATS is consciously dragging its feet on the projected transfer to Andrews, which is 50 minutes driving time away from the White House, compared to 20 minutes for Washington National. The military points out that Andrew's location would mean substantial loss of time for the many "very important people" that ride MATS planes into and out of the nation's capital.

New-type Wind Tunnel

University of Southern California College, of Aeronautics, Santa Maria, Calif., is constructing a new-type wind tunnel to be used for aeronautical engineering research. The tunnel will utilize boundary layer control and is designed for laboratory experiments in turbulence studies, velocity distribution, flow inclinations, pressure losses and other studies in fluid mechanics and aerodynamics.

Boeing Must Bargain, Says NLRB Examiner

A trial examiner of the National Labor Relations Board disagrees with the findings of U. S. District Judge John C. Bowen of Seattle as to the Taft-Hartley labor law's effect on the Boeing Airplane Co. strike.

The examiner, William E. Spencer, has held that the International Association of Machinists' Aeronautical Mechanics local at Boeing had complied with the strike-notice requirements of the law when ilt struck the aircraft plant on Apr. 22, although it did not file a formal written notice as contemplated by the law.

Judge Bowen earlier had denied an injunction, requested by NLRB, on the ground that by not having filed a 60-day notice with Boeing and a 30-day notice with the Federal Mediation and Conciliation Service, the union had not complied with the Taft-Hartley law. This failure, the court held, caused the strikers to lose their status as employes and the union to lose its position as bargaining agent.

▶ **Subject to Review**—Spencer's findings and recommendations are subject to review by the five-member NLRB if exception to them is taken by either party within 20 days of July 25.

Spencer recommended that:

- Boeing and its president, William M. Allen, be required to bargain with Aeronautical Industrial District Lodge No. 751 (IAM) as the certified representative of the 14,500 production and maintenance employes.
- Boeing be required, on application, to reinstate all strikers in their jobs (or substantially equivalent jobs), dismissing if necessary any persons hired since Apr. 25.
- Boeing be required to make up any wages lost by returning strikers as a result of the company's failure to reinstate them after they apply to return to work.

Spencer construed the Smith-Connally law strike notices filed in Apr., 1947 (the Taft-Hartley law was passed in June), and the 14 months of bargaining that ensued before the strike began, as meeting the 60-day "cooling off" requirements of the new labor law, even though formal notice was not filed again.

Air Force Gets WAA Parts

Aircraft components and parts remaining unsold by War Assets Administration by Feb. 28, 1949 will be transferred to the Air Force including agency personnel and records. WAA has $490,000,000 worth of aircraft materiel on hand to sell before that date. There are less than 500 aircraft available, mostly Curtiss C-46 transports and Beech UC-43 stagger-wing biplanes.

Air Force has already requisitioned all remaining Curtiss C-46 transports and sales on this type have been stopped. Air Force is reconditioning the transports, chiefly at Walnut Ridge, Ark., at a nominal rate and flying them to Air Force bases for overhaul and modification preparatory to placing them in service.

Aircraft components consist mostly of engines which are non-certificable by Civil Aeronautics Administration, accessories and airframe spares. These are distributed throughout the country at the 25 authorized WAA disposal agencies and are for sale on a price tag basis.

All three military services and other government agencies will cease surplus declarations by Sept. 30, 1947 preparatory to discontinuance of WAA. Non-aviation materiel and administrative personnel will be transferred to Reconstruction Finance Corp. for disposition.

Controversy Centers On Capital Finances

A strong behind-the-scenes battle is developing in the tangled finances of Capital Airlines.

The company's $4,000,000 bank loan, due Aug. 1, was extended to Nov. 1. Considerable doubt existed for a time, however, that this extension would be made. The Chase National Bank, New York, which heads the banking group, is believed to have favored the extension in the interest of permitting the airline to work out a pending voluntary capital reorganization plan, a long-range phase of which envisions an ultimate Delta-National-Capital airline combine.

▶ **Mellon Opposition**—Definite opposition has been advanced by the Mellon National Bank & Trust Co. of Pittsburgh, which has an $800,000 participation in the same bank loan. (Chase has the largest individual interest, $1,600,000.) The Mellon bank is reported to be sponsoring a Braniff-Capital merger as the way out.

Much of the enthusiasm for this proposed lineup is engendered by the Mellons' interest in a $10,000,000 loan agreement extended to Braniff Airways. Of this amount, about $5,000,000 already has been drawn by the Braniff airline.

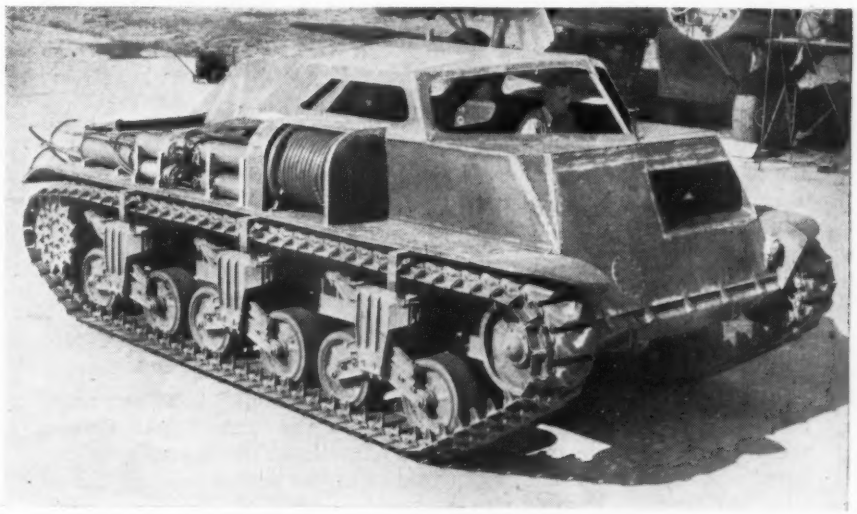
Also believed very active behind the scenes is Ferdinand Eberstadt, investment banker for Braniff, who is known to have attempted to convince Capital debenture holders that their best interests lay in a Braniff merger.

▶ **Mail Pay Factor**—The Mellon bank is also believed to be a strong advocate of declaring the Capital loan immediately due and payable to bring pressure on the Civil Aeronautics Board for additional mail pay compensation in the hope of obtaining "coincidental" relief such as that granted TWA when that carrier found itself with a sudden maturity.

The other banking associates in the Capital loan are thought to be opposed to this strategy, seeing no chance of the plan's success, but the possibility that their loan would be placed in jeopardy.

Cargo Fleet Triples

Pan American Airways' Latin American division plans to triple its all-cargo fleet within the next 90 days through addition of 10 C-46s leased from the Air Force.



FIRE FIGHTING TANK

Remodeled Army tank converted into a new type of airport crash rescue vehicle at the Air Force All Weather Flying Center, Wilmington, Ohio. Tank carries grappling hooks to drag aircraft fuselage out of pools of burning gasoline; foam fog to protect personnel in burning planes and two-way radio for communication with airport.

INDUSTRY OBSERVER

► Douglas Aircraft Co. has received a Navy contract for the construction of two flight articles and one static test model of the XA2D-1, an advanced multi-engine version of the Sky Raider carrier attack plane. Flight tests on the XF3D-1 fighter are continuing with Navy-piloted tests beginning last week.

► Number two Boeing XB-47 took off from Boeing Field, Seattle, with all 18 JATO units firing and continued in a 44-minute flight to Moses Lake Air Force Base, Wash. Piloted by Robert M. Robbins, the 60-ton craft gave its first public demonstration of a full-thrust takeoff to several thousand spectators at the field. Both XB-47s will continue their test program at Moses Lake. Number one airplane already is undergoing Phase II tests with Air Force Major Guy H. Townsend, pilot, and Capt. J. L. Ridley, copilot.

► Wright Aeronautical Corp.'s Turboprop (T-35) has been test flown in the nose of a specially reinforced B-17 with all four reciprocating engines dead. The T-35 will be called the Typhoon.

► Second Curtiss-Wright XF-87, four-jet all-weather fighter, is nearing completion at Columbus. This will be the last F-87 to feature four engines. Production models will be redesigned for twin jets. First XF-87 now has more than 41 hours of flight testing at Muroc.

► North American XAJ-1, Navy multi-engine attack plane, which made its first test flight at Los Angeles Municipal Airport a fortnight ago, is powered by two wing-mounted reciprocating engines and a turbojet unit in the fuselage. It has a high wing and is designed for carrier operation.

► General Electric has developed a portable "electric weatherman" which records automatically and continuously wind directions and velocities in remote, unmanned weather stations. The unit is only slightly larger than an infantryman's pack and can record for 800 hr. without service.

► Martin has a Navy project under way on a giant experimental turbo-prop-powered flying boat. The new boat (XP6M) will be larger than the Martin Mars (145,000-160,000 lb. gross weight).

► Douglas is quietly going ahead with plans to build a jet-powered transport. The Douglas design features six jets slung under the wing and wing tip gas tanks. It will carry between 60 and 80 passengers.

► French Cormorant, an 88,000-lb. four engine transport, crashed during its first test flight at Villacoublay killing all five crewmen aboard. The transport was powered by four Gnome-Rhone 1200-hp. engines and had a wingspan of 152 ft. and length of 95 ft. It was designed to carry 13 tons of cargo or 131 passengers.

► Britain put the first completely turboprop-powered commercial transport into the air last week when the Vickers Viscount flew at Weybridge. The Viscount is powered by four Rolls Royce Dart turboprops and has a top speed of 325 mph. and a range of 1700 miles. It has a pressurized cabin and will carry from 30 to 40 passengers.

► First turbojet powered airliner to fly, the Vickers Viking, last week set a speed record between London and Paris, averaging 394 mph. for the 218-mile hop. Top speed of 415 mph. was reached over the English Channel. Trip to Paris took 34 minutes, the return 36 minutes.

► Considerable refinement in the USAF "push button" C-54 was noted by those who rode in it at Los Angeles during the summer conference of the Institute of Aeronautical Sciences. Automatic maneuvers were executed as smoothly as could be expected of expert human piloting. Those who had flown in it some months ago contrasted present maneuvering with more abrupt and rough maneuvers in the earlier flight. Evidence that the human touch still comes in handy was given, however, when the plane arrived from the east and automatically "landed" 50 ft. above the runway of Los Angeles Airport. The human pilots took over successfully.

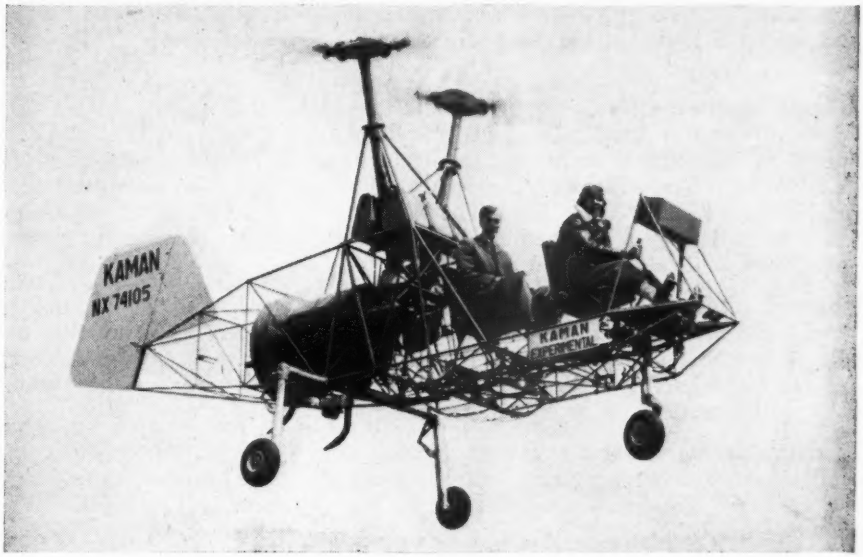
Candy by Air

New York's Loft Candy shops have inaugurated a year-round customer service whereby packages of candy are delivered to ten other cities via a combination of Eastern Air Lines or TWA airfreight and local parcel post. Loft officials state that from two to six days in delivery time is saved through the new service.

Customers pay only the usual parcel post charge.

AVIATION CALENDAR

July 31-Aug. 8—International Air Exposition, New York International Airport (Idlewild), N. Y.
Aug. 4, 1948—Official Manhattan Day luncheon, New York Board of Trade, Aviation Division, New York International Airport (Idlewild), N. Y.
Aug. 5-6—Statewide Aviation Forum, Peoria, Ill.
Aug. 18-20—Society of Automotive Engineers, West Coast meeting, St. Francis Hotel, San Francisco.
Aug. 24—ICAO African-Indian Ocean regional air navigation meeting, Seattle.
Aug. 26-27—International Wakefield Trophy Model Airplane Meet, Akron, Ohio.
Sept. 4-6—National Air Races, Cleveland.
Sept. 5-11—Seventh International Congress of Applied Mechanics, Imperial College of Science and Technology, South Kensington, London, England.
Sept. 7-12—SBAC aircraft show and display, Farnborough, England.
Sept. 9—IATA legal committee, Brussels.
Sept. 13—IATA executive committee, Brussels.
Sept. 13-17—National Instrument Conference, Instrument Society of America, Convention Hall, Philadelphia.
Sept. 14-18—IATA fourth annual general meeting, Brussels.
Sept. 19-21—Twelfth International Convention, Northwest Aviation Planning Council, Vancouver, B. C.
Sept. 20—IATA executive committee, Brussels.
Oct. 6-8—National Association of State Aviation Officials, Copley Plaza, Boston.
Oct. 6-9—Society of Automotive Engineers aeronautic meeting, Biltmore Hotel, Los Angeles.
Oct. 14—Annual Air Line Dispatchers Association convention, Edgewater Beach Hotel, Chicago, Ill.
Oct. 15-24—International aircraft exhibit, Royal Danish Aeronautical Society, Copenhagen.
Oct. 17-21—National Aviation Clinic, Detroit.
Oct. 21-22—Society of Automotive Engineers production meeting, Statler Hotel, Cleveland.
Oct. 22-23—4th Annual Arizona Aviation Conference, sponsored by Chamber of Commerce, Prescott.
Nov. 4-5—Society of Automotive Engineers, fuels and lubricants meeting, Mayo Hotel, Tulsa, Okla.
Nov. 9—ICAO operations division, Montreal.
Nov. 15-17—Aviation Distributors and Manufacturers Assn., sixth annual meeting, Hotel Statler, Cleveland.
Nov. 15-17—National Aviation Trades Assn., annual meeting, Allerton Hotel, Cleveland.
Nov. 16—ICAO airworthiness division, Montreal.
Nov. 16-18—National Association of Travel Officials, Miami Beach.
Nov. 23—ICAO southeast Asia regional air-navigation meeting, New Delhi.
Dec. 2-5—Fourth annual international aviation celebration, El Paso.



Kaman Aircraft Corp. will go into production on this industrial helicopter . . .

. . . in this small former Army Air Forces gymnasium at Windsor Locks, Conn.

Kaman Plans Production in 1949

Industrial helicopter nearing end of certification tests; company scheduling output of 50 craft for first year.

By William Kroger

After three years' work and a $300,000 expenditure, Kaman Aircraft Corp. has an apparently successful helicopter in the last stages of certification tests. Now the company is preparing for a tougher test—commercial acceptability.

Civil Aeronautics Administration's 100-hr. tied-down endurance test has been completed. Autorotation descent from forward flight at 1000 ft. has been accomplished. The company has preliminary assurance that patent rights to the unique Kaman control system are in the clear. The capital structure has been rearranged to make possible increased financing.

▶ **Production Next Year**—Kaman hopes to go into production on the three-place K-190 industrial helicopter early next year. Its present 25-man force will be expanded to about 100. How much additional capital the company will need and the price of the K-190 are undecided. Total of authorized shares has been increased from 50,000 to 300,000, making possible at least $250,000 of increased capital. Price will be determined by material costs.

Only one thing is set about the production plans: Kaman intends to dip gingerly into a market that is by no means booming. First year's schedule calls for output of 50 helicopters.

▶ **State of the Market**—What Kaman is up against has been spotlighted by two recent events. Bell Aircraft Corp., which has been particularly vigorous in drumming up industrial uses for the helicopter, raised its price from $25,000 to $39,500. Higher costs were the main reason for the jump, but obviously a larger market would have indicated a smaller increase.

The Post Office Department's second look at its previous approval of helicopter mail in the Chicago area (Aviation Week, July 26) does not help market prospects. CAA is taking a more conservative view of helicopter operations, and rotary-wing flights into the heart of New York and even into Buffalo (home of Bell) still are banned.

There still are only three certificated helicopters, one Bell and two Sikorsky, with Heller on the West Coast now in the CAA testing stage with its model 360.

▶ **Youth and Invention**—Despite this outlook, 29-year-old Charles H. Kaman thinks his three-year-old company is on its way. The reason is the old theme of a better mousetrap. Kaman's main contribution to rotary wing engineering is a servo flap on the rotor blades that is claimed to give the craft inherent stability. Because uncontested patent rights were not firmly established, the company until recently kept silent on this development. Patents have not yet been issued, but the preliminaries are out of the way.

Kaman was graduated from Catholic University, Washington, D. C., in 1940, and worked for Hamilton Standard division of United Aircraft Corp. until 1945. He had enough faith in his new rotor control system to found the company and to convince a group of wealthy men in Boston of its merits.

Operating as New Enterprises, Inc., these men make available venture capital to businesses, and they have to date poured more than $100,000 into Kaman's organization.

▶ **Cellar to Gym**—Kaman did the initial design and engineering of his helicopter in the cellar of his home in Hartford. After moving twice to get more space, the company finally acquired the former Air Force gymnasium at Bradley Field, located in Windsor Locks, Conn.

The Kaman rotor system first was tried on the K-125-A a two-place craft which made its first flight at Bradley Field on Jan. 15, 1947. Little more than a year later the K-190, prototype of the production model, first flew.

▶ **Selling Piece**—Here is what Kaman Aircraft Corp. has to sell: a helicopter with dual, two-blade intermeshing rotors driven by a 190-hp. Lycoming engine. Empty weight is 1700 lb. and useful load 800 lb. Range is about 235 miles. Top speed is about 95 mph., and cruising speed about 70 mph. in the industrial version with open fuselage. A covered frame would give greater speed but less useful load, Kaman says, and he's more interested in weight-carrying.

The servo flap is mounted to the rear of each rotor blade at the three-quarter

Charles H. Kaman—a better "mousetrap"?

radius station. This flap, the inventor claims, produces a stabilizing force similar to that realized between tail and wing of a fixed wing aircraft. In a sense it produces the same effect as dampening devices, but actually increases responsiveness to controls. In addition, use of the flap eliminates blade pitch change bearings. (Full analysis of Kaman's K-190 and servo flap will appear in a forthcoming issue of AVIATION WEEK.)

► **New Marketing Method**—With a helicopter embodying new control devices, Kaman Aircraft is toying with a new marketing method. Kaman would not turn down an order for a passenger-carrying helicopter, but is more interested in industrial applications.

To that end, it is thinking of leasing its first production models, or licensing them for use, for purposes the company considered most suitable.

Landgraf Seeks Buyer

Landgraf Helicopter Co. at Compton, Calif., went up for sale last week.

Fred Landgraf, president, told AVIATION WEEK that in protection of stockholders' interests the company will not continue experimental development of its twin-rotor helicopter unless a sponsor can be found.

He reports that interest has been shown by several eastern aircraft manufacturers.

The company has as assets Landgraf's patents, a contract with a British syndicate which will return $50,000 a year from the latter's profits on a medium transport development of Landgraf design, and plant property consisting of tooling, a factory building of 8640 sq. ft. and 13 acres of land.

Decision to seek a buyer was reached following the loss of the latest Landgraf experimental helicopter, when it was capsized by wind during a ground run of its rotors.

BRIEFING PRODUCTION NEWS

► **Ludington-Griswold,** Saybrook, Conn., has been awarded a government concontract for construction of 100 accelerometers. First unit will be built to determine costs, after which a price will be formulated for the remaining 99 units. The device was developed at the Navy's special devices division, Sands Point, Long Island, N. Y.

► **The Turbodyne Corp.** is the new name for the Northrop-Hendy Co., a subsidiary of Northrop Aircraft, Inc. formed to develop gas turbine engines. The new unit is an independent facility and will conduct its own development program. The Northrop Turbodyne project began in 1939 and was formally organized as the Northrop-Hendy Co. in 1944. The turboprop unit is capable of 10,000 hp. and is being developed under an Air Force contract. Thomas H. Quayle has been named president of the new corporation.

► **Kollsman Instrument Division,** Square D Co., has developed an engine synchronizing unit known as the Kollsman synchronous differential. The unit consists of two synchronous motors and a mechanical differential which rotates at one-half the difference in speed between the two motors and remains fixed when both motors are turning at exactly the same speed.

► **Pyrene Manufacturing Co.** has developed a new, wheeled foam engine specifically designed for airport use. The unit consists of a 40-gal. capacity extinguisher mounted on 50-in. steel wheels with 8-in. tire tread and 47½-in. width. The engine will deliver 375-400 gal. of foam in three and one half minutes. The foam stream has a range of 40-55 feet.

► **National Aeronautical Corp.,** Wings Field, Ambler, Pa., has appointed two new distributors for Narco's VHF aircraft radio equipment. The new distributors are Qualitorn, Inc., Metropolitan Airport, Van Nuys, Calif., and Aircraft Radio Service Co., Phoenix, Ariz. Narco equipment currently available includes the 22-ounce Narco VTA-1 VHF transmitter, the MB-1 marker beacon receiver and the Narco T-1 field strength test indicator.

► **Cutler-Hammer, Inc.,** Milwaukee, Wisc., electrical manufacturers, announces the location of its new Houston, Tex., sales office at 2415 San Jacinto St. P. G. Greene will manage the office as a branch of the company's Dallas district sales office.

► **Airwork Corp.,** Millville, N. J., has been awarded a contract by Trans-World Airlines international division for the overhaul of all Pratt & Whitney R-2000 engines used on its DC-4 transports. The contract was awarded after studies indicated a saving over costs in the airline's own shops.

► **Hamilton Standard** reversible Hydromatic propeller installation on the Convair-Liner has received CAA certification. Full reverse pitch is obtained in three seconds after the pilot has pulled the throttles back past the idling position into reverse thrust power range. The Hydromatic installation has been ordered for 66 airplanes of eight airlines.

► **General Tire and Rubber Co.** has purchased a controlling interest in Marquardt Aircraft Co., Venice, Calif. Marquardt is engaged in research, development and production of ramjet engines. Roy E. Marquardt, company president, will remain as president and chief engineer, a post he has held since formation of the company in 1944. General Tire also owns Aerojet Engineering Corp., rocket research and production firm.

► **United Aircraft Products, Inc.,** Dayton, Ohio, has added to its line of one-piece aluminum kitchenware following sale of 2,250,000 aluminum muffin pans in the past 18 months. Pans for angel food cake, popovers and drop cakes will be in production by Sept. 15. The pans are fabricated in a single piece with the cups spun in instead of soldered.

► **Continental Motors Corp.** shipped 22,532 engines during June, marking the biggest month since V-J Day. These engines include aircraft, automotive and industrial types and bring to 219,830 the total engines shipped in the eight months ended June 30.

► **Air Associates, Inc.,** has sold its Los Angeles plant to Parker Appliance Co., Cleveland. Air Associates has consolidated all of its manufacturing of aircraft equipment at Teterboro, N. J. Air Associates will continue its Los Angeles branch with a complete service staff and warehouse stock to serve aviation on the West Coast.

Bendix Pacific BUILDS

BETTER

HYDRAULIC PRESSURE REGULATORS

. . . because of their 10-year background.

BENDIX-PACIFIC has been building increasingly better hydraulic Pressure Regulators since 1938. Year after year, each new model has shown improved operating characteristics—quieter, smoother operation, greater freedom from hydraulic shocks and more positive regulation of the cut-in and cut-out pressures. The four latest Bendix-Pacific Regulators, now serving on many types of planes, are widely recognized for their unfailing performance in providing accurate, automatic regulation of system pressures. Complete data of these and other Bendix-Pacific hydraulic controls will be furnished on request.

MOST POPULAR CURRENT REGULATORS

Basic Assembly No.	Operating Pressure	Description
407484	3000	30 GPM regulator. Physically interchangeable with original regulator on DC4—DC6—AD2—R5D.
406600	1500 or 3000	Standard ½ tube size 16 GPM regulator currently used on many latest commercial and military airplanes.
403470	1500	AN STD regulator used on numerous military airplanes. 10 GPM rated.
405300	1500	One of many variations designed for special applications such as emergency valves, automatic fuel valves, landing gear shrinkage, sequence valves.

Pacific Division
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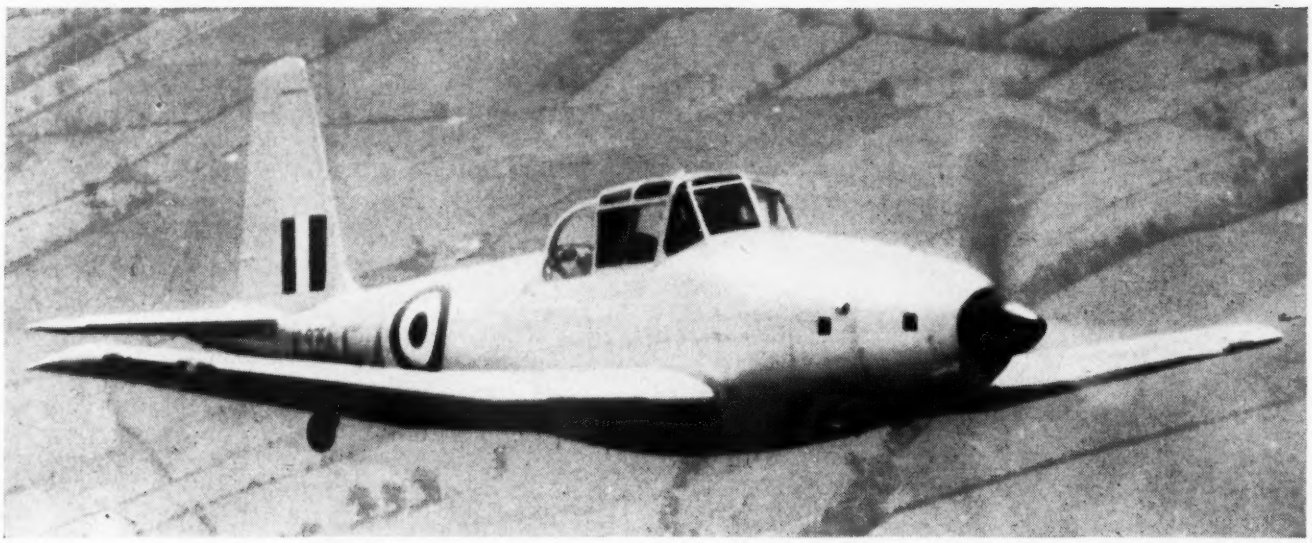

CLEAN LINES of the Balliol stem from turboprop power installation. Plane was designed to take such an engine, but . . .

. . . the first one, shown in flight behind turboprop version, was powered by a radial reciprocating engine.

Modern Engineering in Turboprop Trainer

Britain's Boulton Paul Balliol is step ahead of U. S. postwar trainers, but has some undesirable features.

By Robert McLarren

The world's first turboprop trainer to fly, the British-built Boulton Paul Balliol also is the first of the new, high-performance trainers being developed by the major air forces of the world.

Aside from its unorthodox power plant, the Balliol contains a number of advanced features which characterize it as truly representative of "modern" aircraft engineering–and a distinct advance over anything now in service in the United States.

In addition to meeting the post-war trainer requirements of 300 mph. top speed, 35,000 ft. ceiling, etc., the Balliol also incorporates wing folding for aircraft carrier operation–an extra engineering requirement not demanded in the new U. S. Air Force trainer design competition won recently by North American Aviation, Inc.

► **Extra Student** – The Balliol differs basically from the U. S. high-performance trainer in its provisions for three seats. There is a forward side-by-side arrangement for student and instructor, and a rear seat for a second student who observes the activities up front and acquires valuable experience before actually taking the controls.

However, unlike the new U. S. design, the Balliol is not intended to accommodate primary instruction. The R.A.F. student completes primary solo before receiving assignment to the Balliol-class trainer.

The Armstrong-Siddeley Mamba engine installation is the first physical

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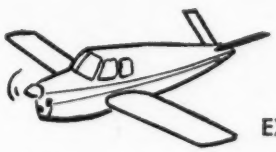
ASSURE *UTMOST* COMFORT when cushioned with



EXECUTIVE PLANES

Whether you're interested in operating, building, or maintaining airplanes, the factor of *dead weight* is of prime importance to you. Less dead weight means improved flight performance . . . or greater payload capacity . . . or increased range.

And *cost* is an essential item in your thinking, too—**or should be.**

Fly-light Nukraft . . . miracle figure 8 hair-latex cushioning . . . will *positively* accomplish two things in your airplane seats: *it will reduce weight and lessen cost.* Again: Nukraft will reduce *weight* and lessen *cost.* Not claims . . . but *facts* . . . time-tested and flight-proved—even on standard seats rebuilt and cushioned with Nukraft.

Fly-light Nukraft is *luxury* cushioning—gives deep restful comfort—the kind passengers and crews appreciate. *And* Nukraft may reduce your seating maintenance expenses. It's tough, resilient, long-wearing.

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SHELBYVILLE, INDIANA

CABLE ADDRESS NUKRAFT – SHELBYVILLE – or PAULHAREX – CHICAGO

MAMBA-POWERED Balliol in flight. Engine tailpipe is barely visible under fuselage.

FOLDING WINGS of the trainer are designed to make the plane useful to the Navy.

example of the cleanness inherent in use of a turboprop. The nose of the airplane is tapered to the spinner to a degree permitting almost unmatched visibility forward both in the air and on the ground.

▶ **Powerplant**—The Balliol's powerplant arrangement is simple, and surprisingly similar to conventional reciprocating engine installation. Three points on the engine casing are supported by tubular struts attached to four points on the firewall. Since the engine is substantially vibrationless, no rubber bushings or special vibration-dampening mounts are required.

The installation presents only one feature new to practice: the engine tailpipe. In the Balliol, the pipe is routed under the cabin floor to a flush outlet on the lower right side of the fuselage.

This asymmetrical location prevents jet interference with the tail surfaces and also provides an anti-torque force to counteract the torque created by the propeller. (In an equivalent U. S. design the outlet probably would be placed on the left side of the fuselage, U. S. propellers turning in a direction opposite to that of British propellers.)

The tailpipe is insulated by enclosing it in a duct, with aluminum foil providing the necessary insulation and ram pressure air being ducted from the wing leading edge into the casing to provide cooling.

▶ **Accessory Drive**—An advanced technique, recently advocated in U. S. engineering conferences, is the use of a remote-driven accessory gear box mounted at the base of the firewall. This box, driven by an extension shaft from the propeller reduction gear box in the nose, contains pads for a generator, a vacuum pump and a compressor. This practice greatly simplifies the engine installation and removes the cumbersome accessory drives, normally contained directly on the engine, to any convenient location chosen by the designer.

The small size of the turboprop engine also permits the installation of a fuselage fuel tank within the power plant compartment forward of the wing leading edge. This forward location simplifies the balance problem over that of U. S. designs in which a fuselage tank, if used, must be placed behind the cockpit and its contents held to the maximum permitted by the permissible rearward c.g. location.

▶ **Landing Keel**—The Balliol is the first military aircraft to have built-in keel shock absorbers, an old glider practice but one new to powered aircraft. The lower fuselage keel is suspended in three locations by heavy, cylindrical rubber shock absorbers mounted on the bottom of the two spars and on a third fitting supported by tubular struts at the wing leading edge.

Although the use of fuselage keels to prevent damage due to belly landings is common, these rubber bumpers absorb the impact both to the structure and to the crew.

Associated with this feature is a special landing-gear-down latch release which can be actuated when the pilot sees the danger of his overshooting a landing. The landing gear then can be folded up to let the airplane down on its cushioned belly, thereby bringing it to a quick but gentle stop before the end of the runway is reached.

▶ **Wing Construction**—The wing structure is a conventional two-spar box beam system but employs light construction by U. S. standards. Spar flanges, for example, are a single angle-section hand-forged from bar stock and riveted to the webs on the aft face.

Spar fittings are not used but the flanges widen into drilled ends to receive the spar bolts. Spar sections continue through the fuselage, there being no center section per se.

The Balliol uses an NACA 65-series section, which has its maximum thickness at the 40 percent chord. This thickness distribution permitted Boulton Paul designers to place the front spar at 33 percent chord and rear spar at 70 percent chord. This disposition permits adequate leading edge space for the landing gear and adequate between-spar area for the fuel tank.

▶ **Even Dive Brakes**—A feature unusual in a trainer is the use of spoiler-type dive brakes on the Balliol. These are mounted in the wing leading edge and are perforated arcs extending above and below the wing when actuated. The lower brake panels have an area about three times that of the upper panels.

Placement of these brakes so far forward is not satisfactory in U. S. practice, although the wing profile used

may have produced results at variance with U. S. test data on more conventional sections. The method of operation seems complex by U. S. standards but follows the general European propensity for "gadgeteering" in aircraft detail design, particularly in operating systems.

Boulton Paul has used pneumatic operation throughout the Balliol, a system only now entering serious technical debate in the U. S., although it has been used on actual aircraft, notably the Convair XB-46 four-jet bomber. Main pressure-air supply is piped to pneumatic actuating struts throughout the aircraft to operate the landing gear, flaps and dive brakes.

▶**Control Surfaces**—All flight controls of the Balliol are push-rod controlled, an installation considerably heavier than conventional cable installation but eliminating the system deflection objectionable in the latter.

An unique feature of the new trainer is the interchangeability of the horizontal and vertical stabilizers, a feature that will surprise engineers. This equality of area may have resulted from an accidental combination of features in the Balliol layout or may have been planned deliberately.

Generally, such an arrangement would tend to produce either longitudinal or spiral instability in a conventional layout but stick-free neutral stability in climb and stick-free stability in level flight is claimed for the Balliol so that neither of these effects appear to have materialized.

Ailerons, elevators, landing gears, horizontal stabilizers and fuel tanks are interchangeable right and left, a distinctive maintenance feature. Sealed-gap ailerons are used, the spanwise lip along the aileron leading edge also being used as a convenient location for mass-balance weights.

The flaps are simple split trailing edge type consisting of two inner wing and two outer wing sections. Only the inboard sections are controlled. The outboard sections are lowered and raised through a link connecting the two sections, which lie on opposite sides of the wing fold.

▶**Folding Wings**—Wing folding is by hand. Lower spar fitting bolts are removed prior to folding by another "gadgeteering" arrangement in which a small plate is moved on the wing lower surface, a telescopic lever drops down and is pushed rearward by the mechanic, a series of bellcranks and push rods extracting the pins from their fittings.

The outer wing panels fold directly upward to give the Balliol a height of 15 ft. 8 in.—a puzzling detail inasmuch as the hangar decks of two of the important British carriers are but 14 ft. high. It thus cannot be stored below, a rigid requirement of all U. S. carrier aircraft design specifications.

Other features of interest in the Balliol:

- It is equipped with a series of windshield filters which may be raised and lowered remotely to provide blind flying conditions. The filters are amber colored which, in combination with blue goggles worn by the student, exclude light from the cockpit.
- A special tow fitting is mounted in the extreme aft end of the fuselage to permit towing gliders or target sleeves.
- The entire canopy is jettisonable either in sections or in whole as the situation may demand.
- The floor next to the rear seat has been cut away and a non-skid walkway provided on the right side of the fuselage to permit the occupant to move around and behind the seat for access to radio equipment carried on a shelf.
- Wing fuel tanks are cylindrical in shape and may be removed when the wings are folded by withdrawing them spanwise from the trough in which they are installed.

▶**Development**—The Balliol has had an interesting history that illustrates the hazards of planning progress. The design was begun shortly after V-J Day to provide the R.A.F. with a training plane that would furnish a smooth transition from primary to advanced training in jet aircraft.

Work on the plane got under way early in 1946 with the design specifying the Rolls-Royce Dart turboprop engine. It soon became apparent that this engine would not be ready in time and the design was altered for the Armstrong Siddeley Mamba turboprop engine. This engine, too, was delayed in gaining approval for installation.

Boulton Paul completed the air frame in about 10 months and proposed that the plane be flown with a reciprocating engine temporarily in order that stability and control tests be run while the turboprop engine was unavailable. This plan was approved by the Ministry of Supply and the Balliol first flew in early summer, 1947, powered by a Bristol Mercury engine. This prototype has been given extensive flight tests in the year since its first flight and is still being flown with the Mercury engine.

Meanwhile the Mamba engine successfully passed its block tests and was installed in the second Balliol. First test flight of this turboprop-powered trainer took place on Mar. 24, 1948 but the flight ended in a crash due to the propeller slipping into neutral pitch during the landing approach.

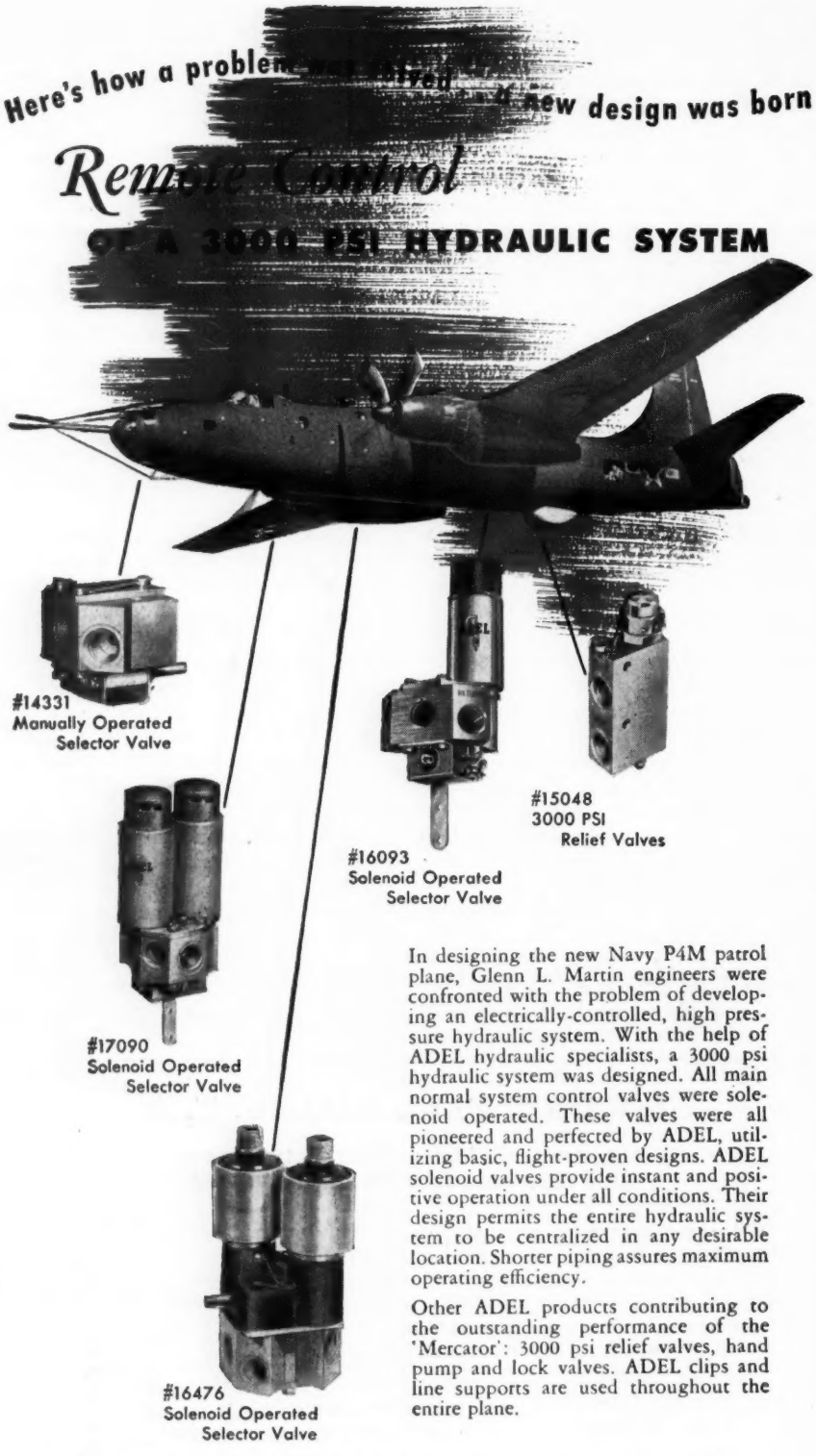
A third Balliol powered by a Mamba was completed shortly thereafter and made a successful test flight on May 17, 1948, the first turboprop military trainer in the world to fly. A fourth Balliol is now nearing completion with the Rolls-Royce Dart engine installed.

▶**Future in Doubt**—The future of the Balliol remains uncertain, however, for the current production order is for a small quantity of R.A.F. versions powered by Rolls-Royce Merlin reciprocat-

BOULTON PAUL BALLIOL T. 1

Armstrong Siddeley Mamba turboprop
1000 hp. plus 320 lb. thrust takeoff

Span	39 ft. 4 in.
Length	36 ft. 6 in.
Height	10 ft. 7 in.
Wing Area	250 sq. ft.
Empty Weight	
Structure	2865 lb.
Power Plant	1707 lb.
Fuel and Oil systems	298 lb.
Fixed Equipment	862 lb.
Total	5732 lb.
Useful Load	
Fuel (169 gal.)	1369 lb.
Oil (3¼ gal.)	22 lb.
Crew (three)	672 lb.
Total	2063 lb.
Normal Gross Weight	7795 lb.
Speed (maximum)	307 mph. @ 20,000 ft.
(cruising)	272 mph. @ 20,000 ft.
Ceiling (service)	36,750 ft.
Range	672.5 mi.
Takeoff (clear 50 ft. obs.)	1530 ft.
Land (clear 50 ft. obs.)	1950 ft.



In designing the new Navy P4M patrol plane, Glenn L. Martin engineers were confronted with the problem of developing an electrically-controlled, high pressure hydraulic system. With the help of ADEL hydraulic specialists, a 3000 psi hydraulic system was designed. All main normal system control valves were solenoid operated. These valves were all pioneered and perfected by ADEL, utilizing basic, flight-proven designs. ADEL solenoid valves provide instant and positive operation under all conditions. Their design permits the entire hydraulic system to be centralized in any desirable location. Shorter piping assures maximum operating efficiency.

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ing engines. This power plant was selected due to its immediate availability while Mamba production gets under way.

However, Naval Aviation has not yet committed itself to the Balliol and work on a carrier arresting hook installation has been suspended temporarily. British observers are confident, however, that the winner of the Boulton Paul Balliol–Avro Athena (a similar design) competition will be awarded a production order for both the Royal Air Force and Naval Aviation.

Hughes Suit Calls Propeller Defective

Howard Hughes is suing United Aircraft Corp., East Hartford, Conn., for $488,000 damages as the result of the crash of his XF-11 twin engine photo-reconnaissance plane. The XF-11 crashed in Beverly Hills, Calif., June 7, 1946, during a test flight. Hughes was injured severely.

In suit filed in a Texas state court at Houston, Hughes asked $250,000 in personal damages and $238,000 for the Hughes Tool Co. of Houston. Hughes' petition charged that United Aircraft Corp. "delivered defectively designed and manufactured propellers" to him for the XF-11. The propellers were a four-bladed counter-rotating type manufactured by United's Hamilton Standard Propellers division.

Propeller pitch control is actuated by an oil hydraulic system. When excessive oil losses occur the propellers reverse pitch. Hughes charged that United did not make sufficient provisions to prevent these oil losses and that the rear blade of the right hand propeller on the XF-11 reversed in flight, producing a braking action.

Hughes also claimed that there were not sufficient indicating instruments for the propellers. He said the cockpit instruments indicated only average propeller performance and not the specific source of any propeller trouble that might occur.

Laboratory Debt Paid

Cornell Aeronautical Laboratory, Inc., has repaid the $250,000 balance of the $350,000 borrowed from the university to meet initial expenses and is now operating on a completely self-sustaining basis.

T. P. Wright, president of the corporation, said that repayment of the loan means that the laboratory is not utilizing endowment funds or any other resources of the university.

Another entry in the helicopter lists has been demonstrated in Seattle after being quietly constructed and tested . . .

New Coaxial Rotor Helicopter . . .

. . . in a remote mountainous area in Washington by former employees of Bendix Helicopters. Staff of the Jensen Helicopter Co. (left to right): Dave Johnstone, machinist; Stanley Walsh, assistant to the president; Mrs. Walsh, office manager; Martin Jensen, president; Frank Culen, engineer and aerodynamicist; and Joseph Sneadaker, shop superintendent. Kneeling are: James Couperthwaite, chief test pilot; James Vernon, chief engineer; and Hans Schalnit, tool maker.

. . . Built by Small Staff of Engineers

A contra-rotating, coaxial rotor helicopter manufactured by the Jensen Helicopter Co., Inc., of Tonasket, Wash., has had its first public demonstrations at Seattle after having compiled 15 hours of flight time since its completion four months ago.

With James Couperthwaite, chief test pilot, at the controls, the Jensen Model 21 showed remarkable characteristics of maneuverability, particularly in braking to a quick stop from forward flight. Two and three demonstrations were conducted daily over a period of three days.

The Jensen company was organized early last year by former Bendix Helicopter personnel—Martin Jensen, president and designer; James Vernon, chief engineer; Frank Culen, engineer and aerodynamicist; and Stanley Walsh, assistant to the president.

► **Two-Place**—The new helicopter is a two-place machine, with an empty weight of 1008 lb. and a useful load of 592 lb. normal or 642 lb. stripped-down. It has a 125 hp. 6-cylinder Continental C-125-2 power plant although a 145-hp. Continental C-145 may also be used. Shock-mounted on rubber, the engine has dual mufflers which make operation extremely quiet. The fuselage is all metal, semi-monocoque; 13 ft. 9 in. long; 3 ft. 9 in. wide; 6 ft. 3 in. high to the top of the tail fin and 9 ft. 6-in. to the top of the rotor. The rotors are 27 ft. in diameter.

The craft has a claimed top speed of 100 mph., a cruising speed of 80 mph. at 75 percent power, a range of 220 miles or 2¾ hours on 20 gallons of gas, a vertical rate of climb of 500 ft. per minute without wind, a maximum rate of climb of 1100 ft. per minute and a ceiling of 13,000 ft.

► **Isolated Shop**—The helicopter was designed and built under unusual conditions at Jensen's ranch in an isolated area near Tonasket. The designers had no distractions except the cattle which occasionally stuck their heads in the windows.

Before production of the first model could begin, a $20,000 machine shop had to be built. Some of the work had to be subcontracted, principally the transmission, but most of it was carried on at the ranch, beginning last August.

Production now is under way on two other ships for airworthiness tests by the CAA. Commercial production is at least a year away, but Jensen plans to sell at a price "substantially below" that of present two-place helicopters.

Elimination of the conventional tail rotor makes available an additional 10 to 15 percent of the engine output for lift and forward speed, according to Jensen.

► **Construction Details**—The blades are constructed of a pressure-mounted birch plywood spar covered with a three-ply spruce veneer skin, with upper and lower surfaces interchangeable. All stressed parts are forgings. The rotor shafting and rotor pylon mounting is connected rigidly with a single stage reduction gear transmission built by the Western Gear Works of Seattle. These two units are mounted with specially designed Lord rubber mounts which tend to isolate any rotor vibrations from the fuselage.

The rubber-mounted transmission consists of an upper and lower ring gear driven by a single pinion gear. It has an independent lubricating system consisting of a scavenger pump, oil tank and pressure pump. The transmission is connected to the engine by a drive mechanism consisting of a double Uni-

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versal joint containing a rotor brake to prevent the blades from windmilling in heavy ground winds, an engaging friction clutch which brings rotor speed up to engine speed, a direct drive clutch for a positive drive without slippage during flight and an overriding clutch which permits the rotors to continue to turn in a safe auto-rotative landing in case of engine failure.

►**Saving Weight**—A cable-type ratchet starter, operated from the cockpit, eliminates the need of an electrical starter, generator and battery, with a subsequent weight saving of approximately 40 lb. A single lever in the cockpit coordinates all clutching and braking positions.

A combination fan and flywheel cools the engine during zero air speed. Two interconnected bladder-type nylon fuel tanks are located amidships near the center of gravity, with gravity flow to the carburetor. Nose covering and tail fin may be removed.

The landing gear is of the tricycle type, with the main gear near the engine and a single nose gear, fully castering, located forward. Struts are hydraulic.

The seats are side by side, with dual flight controls, and a baggage compartment behind the seats. A collective pitch stick incorporates a hand throttle which automatically anticipates the engine horsepower requirements.

New Prestressed Concrete Tried on Orly Runway

(*McGraw-Hill World News*)

PARIS—First stretch of a new type of prestressed concrete landing strip has been completed at Orly Field by French engineers.

The experimental strip is approximately 1400 ft. long, 200 ft. wide and 6 in. thick. Strength is said to be at least equal to a conventional strip four times as thick.

Eugene Freyssinet, who designed and patented the test section, claims prestress tension could be more than double that of the Orly job without increasing thickness of the concrete.

►**Angle Joints**—Diagonal joints at a 45 deg. angle made only transversal prestressing necessary. Because heavy equipment was lacking, meter-square concrete blocks were used to form the test section, which is part of an ordinary concrete landing runway.

An important feature is the ability of the prestressed segment to close up cracks made under load.

Freyssinet, who is head of the Technical Society for Utilization of Prestressing, says his runway could carry planes three times the weight of any yet built.

New Circuit Integrity with

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AIRCRAFT WIRE

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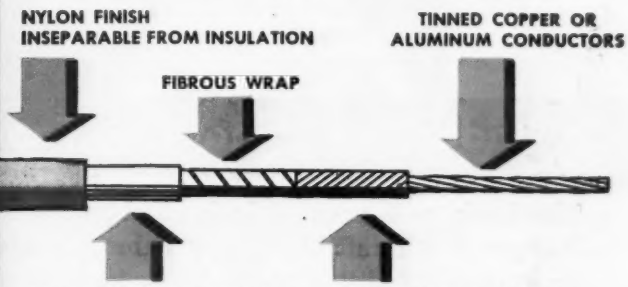
Take a match or Bunsen burner and apply the flame to a section of Neolay Aircraft Wire. You'll see that Neolay will *not* support a flame.

That is one of the reasons why this new aircraft wire provides *thorough* circuit integrity not only under extreme conditions, but at all times.

Neolay is easier to handle and install, because it has a smooth nylon finish, a smaller diameter and lighter weight than the usual aircraft wire. Because of the nylon covering, no fibrous or braid cover is needed. The insulation has the highest physical and electrical properties.



You will find Neolay has high di-electric strength, plus resistance to mildew and the solvent effects of oil, gasoline, glycol, fresh and salt water.

Neolay with aluminum conductors is made in sizes AL 18-4/0. With copper conductors it is made in sizes AN 22 to AN 4/0.

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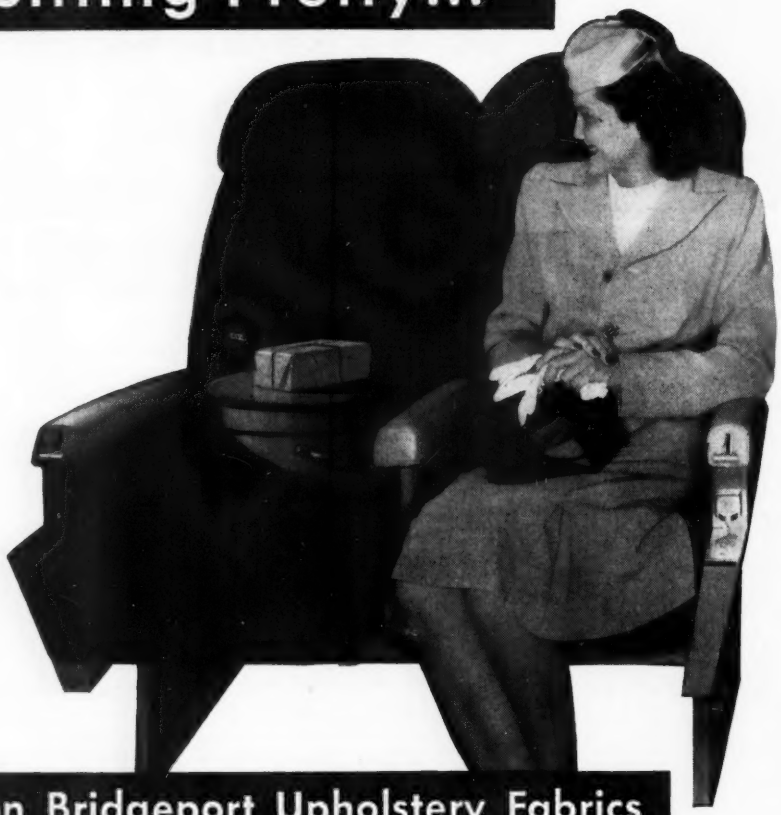
UNITED STATES
RUBBER COMPANY

Sitting Pretty...



on Bridgeport Upholstery Fabrics

The fresh, well-groomed look of plane seats fitted with Bridgeport Aircraft Upholstery Fabrics is assurance that passengers are sitting pretty. These smartly styled fabrics are smooth, soft, and comfortable. They won't feel bristly or cling to clothing on even the hottest summer day. And there are other features important to the manufacturer or airline operator. Bridgeport Fabrics are made of the finest woolens and worsteds, tightly woven to resist dirt and stains. They can be brushed bright in a moment. They are extremely lightweight and long-wearing with special construction features that speed up installation by as much as 20% over other type fabrics. In addition, Bridgeport Fabrics have been certified flameproof by the CAA.

These fabrics are made in many standard patterns and colors, or designs may be created for your exclusive use. Write for complete information and sample swatches.

Specify Bridgeport Aircraft Upholstery Fabrics ...leading manufacturers & airlines do.

for SEATS BACKS SIDEWALLS HEADLININGS

Bridgeport FABRICS, INC.
BRIDGEPORT 1, CONNECTICUT

Est. 1837

"Supersonic Sickness" Reported on by Navy

First published results of scientific "supersonic sickness" experiments indicate that the ultrasonic noise of turbojet engine exhaust has no harmful effect on human tissue, although minor stomach and tooth aches may be experienced.

The tests were conducted by the Navy Aero Medical Equipment Laboratory, Philadelphia, following a growing list of newspaper reports of the ailment since V-J Day. The reports began in England and spread throughout the U. S., causing Navy Bureau of Medicine and Surgery to suspect "pure sensationalism" leading to "suggestibility" as a possible cause of the spread of the malady.

▶ **Ten-Day Tests**—Navy tests were conducted by a medical officer and nine enlisted men who were subjected to the noise of a General Electric I-16 turbojet engine for one hour each day for five days, followed by two hours a day for an additional five days. The men were protected against ordinary audible noise by headphones, ear "doughnuts" and cotton ear plugs in order that the ultrasonic vibrations would not be confused with sonic excitations. For one 15-minute period they were exposed to the noise without ear protection.

The results indicate no harmful physical effects on human tissue, but some fatigue, loss of weight and hearing difficulties may be expected for short periods following exposure. The Navy indicates that these tests are too meager to predict complete harmlessness for all types of jet engines under varying conditions.

Investigations are being continued, not only by the Navy, but by others.

Helicopter Price Upped

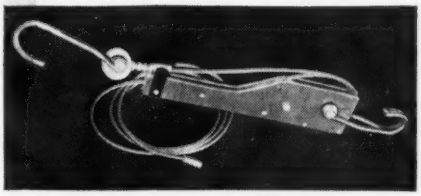
Increase in the price of the Bell Model 47-D helicopter has been announced by Lawrence D. Bell, company president, who gave increased production costs and large expenditures for accessory development as the main reasons for the raise.

Craft which formerly sold for $25,000 will now sell for $39,500.

Le Page to Agency

W. Laurence Le Page, one-time editor of Aviation, was recently named vice president in charge of engineering at the Adrian Bauer Advertising Agency, Philadelphia. Le Page takes with him 25 years' experience in the aircraft and air transport industries.

NEW AVIATION PRODUCTS



Cargo Tie-Down

Frank Davis, inventor of a major portion of cargo tie-down equipment, has developed a new single-piece tie-down device, Type FD-290. Designed primarily to secure heavy materials and equipment such as airplane engines, motor generators, machinery, etc., unit seems to be simple in construction and easier to use than most such equipment, with additional advantage of being in one piece so that parts cannot be mislaid. Standard gear has 12-ft. cable adjustable to lengths of from 1 to 12 ft. To operate: fasten hook on one end of unit to object to be secured. Opposite end is attached to plane anchorage. Slack cable is then pulled through gear until required length is obtained, and assembly handle is rotated 180 deg., tightening cable and locking gear. Strength of gear is stated to be equal to cable's strength, which varies from 1900 lb. for $\frac{1}{8}$ in. to 6600 lb. for $\frac{1}{4}$ in. cable. Complete assembly, which weighs 2.8 lb., is available from **Air Associates, Inc.**, Teterboro, N. J.

For Temperature Measurements

Bonded wire resistance thermometer element, RdF Stikon, for measurement or control in industrial processes and laboratory investigations as well as for temperature sensing in instrument applications such as telemetering of flight data, has been designed by **Ruge-de Forest**, 76 Massachusetts Ave., Cambridge 39, Mass. Unit is also adaptable for measuring temperatures on rotating shafts, propellers, etc. Element consists of nickel wire grid bonded into Bakelite wafer attached to surface, whose temperature is to be measured, by Bakelite cement. Unit is within tolerances permitted by AN specifications. Deviation of element from standard is given for 70 F.

For Grinding Operations

New $\frac{1}{4}$-hp. type No. 128 electric bench grinder is marketed by **Speedway Mfg. Co.**, 1834 So. 52 Ave., Cicero 50, Ill. Wheels are 6 × $\frac{3}{4}$ in. with $\frac{1}{2}$-in. holes and have 46 and 60-80 grit, respectively. Tool rests are fully adjustable to compensate for wheel wear and have built-in side guides of pre-set angles that simplify grinding.

Coated Cable

Nylon-coated cable, "Wirelon," for use in aircraft control systems, is marketed by **Rochester Ropes, Inc.**, Culpeper, Va. Product is available in $\frac{1}{32}$ to 1-in. diameters. It's claimed that coating is unaffected by oils, cleansing agents, or alkalies; reduces possibility of birdcaging, fanning out, or kinking; and protects against injury from steel splinters. Properties of coating include —tensile strength: 13,400 psi. at −70 F., 4930 psi. at 77 F., water-absorption: 1.99% (0.106-in. disk.); and flammability 0.45 in./min.

Lube for Horizontal Engines

Detergent-dispersant lubricant, Gulfpride aviation oil Series D, for horizontal engines in light craft, has been developed by **Gulf Oil Corp.**, Pittsburgh 19, Pa. Claimed is that oil decreases operating and maintenance costs, gives greater engine reliability, keeps engines clean, frees sticking valves and rings, and achieves maximum protection for engine materials.

Reset Timers

New series PAC timers, designed for accurate process control in industrial applications, are offered by **Industrial Timer Corp.**, 115 Edison Pl., Newark, N. J. Units range from PAC-5S, which has timing rate of 5c. to 5 sec., calibrated in 5c. steps, to PAC-3H, ranging from 2 min. to 3 hr., calibrated in 2-min. steps. Features include: instant automatic reset, time-setting adjustment, and easily read dial.

Drilling in Masonry

For general purpose masonry drilling, around airports and shops, in concrete, brick, stone, tile, marble, plaster, sheet rock, etc. are "Hi" carbide tipped drills made by **Holub Industries, Inc.**, of Sycamore, Ill. Devices, available in range of sizes from $\frac{1}{4}$ to $1\frac{1}{2}$ in. dia., are for use with electric rotary or breast drills.

Hand Crimper

Of interest to aviation shop personnel engaged in sheet metal work requiring crimping, seaming, bending, forming, and straightening operations, is new 45-deg. hand crimper made by **Roesch Tool Products**, 8913 Olin St., Los Angeles 34, Calif. Tool features concave line running to back of crimper jaw, making it possible to work in confined areas. Handle curves to fit hand. Models are available with $3\frac{1}{2}$ or $2\frac{1}{4}$-in. jaws, and are $9\frac{1}{2}$ in. long.

First Indian Plane in Prospect

Personal plane design seeks market lost to American manufacturers through restrictions on dollar imports.

CALCUTTA (via London)—A drawing board project that may turn out to be the first Indian-built plane is the "Meghdoot"—a Bengali word meaning "Ambassador of the Air"—a two/three-place enclosed-cabin personal plane with a fixed tricycle undercarriage.

The project is the joint design of Biren Roy, secretary of the Bengal Flying Club, Calcutta, and an English amateur pilot resident in India. It aims at tapping the demand for a training plane by Indian airline companies and flying clubs which are now unable (because of Indian Government restrictions on dollar imports) to import American personal planes.

Plans call for building two prototypes, in spruce frame and birch plywood sheathing, for initial testing and modification. Subsequently, if all goes well, Roy and his associate may venture into production of all-metal versions, one a side-by-side two-seater training plane and another a four/five-seater personal aircraft.

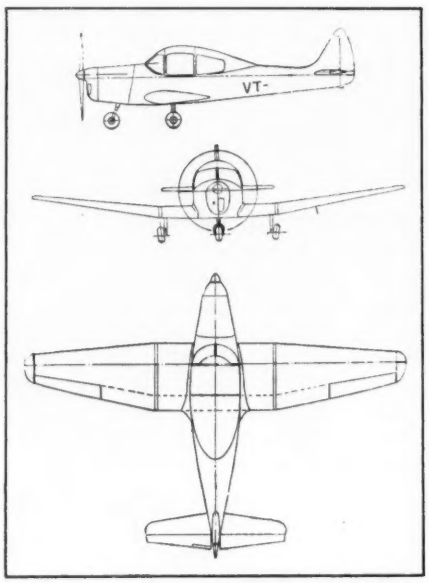
► **Low Landing Speed**—The projected "Meghdoot" would have a very low landing speed, 50 mph., and would cruise at an estimated 125 mph. All necessary components already are assembled with the exception of the undercarriage. Roy at present is visiting England and America in search of a gear that will be light enough and still dependable. He has also laid the design of the plane before the British Air Registration Board, for preliminary examination as to its airworthiness.

The plane will be powered by a 130/140 hp. air-cooled engine, either a de Havilland Gypsy or a Lycoming—already acquired out of surplus stocks.

Dimensions: wing span, 28 ft. 10 in.; length, 22 ft. 3 in.; cabin width, 3 ft. 6 in.; wheel track, 8 ft. 6 in.

► **Restrictions Continue**—Because India's restrictions on imports are likely to persist for some time, some observers feel that foreign lightplane manufacturers would be well-advised to consider setting up Indian companies and assembling their planes in India. This could be done on an "as is" basis or with minor modifications to meet the definition of "an Indian design."

India has skilled technicians and ample factory space. Reports indicate that planes priced at $2500 to $3000 are assured of good demand.



Three-view drawing of the "Meghdoot"

Because American certification of airworthiness is not accepted unqualifiedly by Indian registration authorities, many American lightplanes in India cannot be flown for training or hire purposes. British lightplane airworthiness certificates, on the other hand, are accepted without qualification.

Indian civil aviation authorities are going slowly, and they show the effect of long association with British regulations.

Australian Increases

MELBOURNE—A Department of Civil Aviation release analyzes 1947 air traffic returns to show that air travel is used by one person in eight in Australia a year, compared with one in ten in the U. S.

Australian domestic passengers increased by 60 percent over 1946 to a total of 1,036,895. Freight volume carried set a new record with 18,472 tons, an increase of 118 percent over 1946.

► **Ranking**—Australian National Airways carried 527,994 passengers, more than twice as many as Trans-Australian Airlines' 260,391. Ansett Airways ranked third with 46,952 passengers. The year was TAA's first full calendar year of operation.

While the government-owned TAA maintained a passenger load factor of about 60 percent throughout the year, ANA's loadings improved to 71 percent for the last 1947 quarter and averaged 66 percent for the whole year.

Sunderland Modified As Island Standby

JOHANNESBURG—The South African Air Force is preparing a Sunderland flying boat for flight to and from Marion Island in the South Atlantic, advance information station for South African meteorological services.

Authorities consider a standby aircraft should be available in event of sickness among the men on the island, one of two occupied by South African forces late last year.

Four extra tanks have been fitted to the Sunderland's bomb racks, giving it a fuel capacity of 3000 gal., 500 more than usual.

SAAF started the plane last month on a trial flight approximately the distance to Marion and return, but carburetor trouble developed and the Sunderland returned to base. The trial was postponed.

World News Briefs

AMSTERDAM—

The Dutch Government rejected KLM's plan to construct a central airport at Burgerveen, southwest of Amsterdam, to take the place of Schiphol. According to a British Ministry of Civil Aviation report, the government decided to retain Schiphol and to build a new field at Schieveen, near Rotterdam.

LONDON—

During the first year of radar control at London Airport, 2184 planes made ground-controlled approaches to land. . . . Air Commodore Wilfred Wynter-Morgan, former RAF vice president of the Ordnance Board, joined the British Joint Services Mission in Washington. He replaces Air Commodore F. G. S. Mitchell, who succeeds him on the Ordnance Board.

RIO DE JANEIRO—

Sao Paulo airport had 2271 takeoffs and 2268 landings during May. . . . Joao Aberto Lins de Barros, wartime economic coordinator of Brazil, is president of Transcontinental, a nonscheduled cargo carrier hauling food to and from the Brazilian interior.

All over the World

Federal's Instrument Landing Equipment Provides Increased Safety

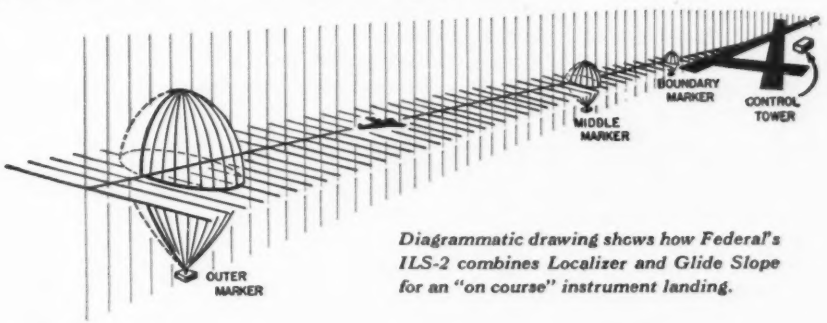
Since the earliest days of radio aids to navigation, Federal has been closely identified with the development and manufacture of equipment designed to promote safety and dependability in aircraft operation.

Over the years Federal has continuously demonstrated leadership in the field of radio by such achievements as the marine radio compass . . . low frequency simultaneous voice four-course radio range . . . VHF multi-loop localizer . . . equi-signal glide slope for more accurate instrument landing . . . the first standard ILS developed for the U. S. Bureau of Air Commerce.

With the advent of World War II, Federal was commissioned to design and manufacture the SCS-51 for the United States and allied countries. At the end of the war, Federal redesigned the military SCS-51 to provide such additional features as remote monitoring and control.

Now Federal has designed and placed in production a complete post-war system designated ILS-2. It is produced in accordance with the standards of the International Civil Aviation Organization. Federal's ILS-2 offers an *all-in-one* system—a complete system designed, produced and tested by the leader in the field of air navigation equipment.

Federal equipment is utilized in the US-CAA Instrument Landing System at the New York International Airport.



Diagrammatic drawing shows how Federal's ILS-2 combines Localizer and Glide Slope for an "on course" instrument landing.

KEEPING FEDERAL YEARS AHEAD... is IT&T's world-wide research and engineering organization, of which the Federal Telecommunication Laboratories, Nutley, N. J., is a unit.

Federal Telephone and Radio Corporation

100 KINGSLAND ROAD, CLIFTON, NEW JERSEY

In Canada:—Federal Electric Manufacturing Company, Ltd., Montreal, P. Q.
Export Distributors:—International Standard Electric Corp. 67 Broad St., N. Y.

FINANCIAL

Curtiss-Wright Business Analyzed

New report discloses for first time operational and fiscal details of many components of corporation.

A comprehensive report of Curtiss-Wright Corp., serving as an impartial analysis of the company, is now being widely read in investment circles. Issued by B. J. Field of New York, this 35-page study is of particular interest in view of recent developments surrounding Curtiss-Wright.

Chief value of the report lies in the compact manner in which the company's current position and future potentialities are analyzed and appraised. For the first time, the contributions of the various component units to Curtiss-Wright are made public.

Among other things, it is shown that the company's propeller division had outdistanced the airplane division from the standpoint of orders booked. However, with the benefit of a recent order for 88 F-87s, the airplane division is again believed to be in a position to account for larger billings than the propeller division.

▶ **Wright Losing Ground**—The Wright Aeronautical Corp. is represented to be the backbone of the Curtiss-Wright Corp. Nevertheless, Wright has been losing competitive ground to United Aircraft's Pratt & Whitney. Pratt & Whitney's engine shipments during 1946 are shown to have been more than three times those of Wright's.

The jet engine has replaced the piston type for major application in military aircraft. The leadership in this newer engine development has been assumed by General Electric, Westinghouse Electric and the Allison division of General Motors Corp. Both Wright and Pratt & Whitney have been slow in participating in the development of jet and gas turbines. This is attributed to their preoccupation during the war with production problems of their conventional type engines.

Now a belated effort is being made to obtain a foothold in this new engine field. About $30 million is being spent by the, two old line builders on jet development. Pratt & Whitney is assured of a good entry in the jet field through the licensing of the Nene engine rights from Rolls-Royce. Wright has a production contract on its own T-35 turboprop engine, in addition to having assumed the development of the XJ-37 turbojet. Recently Wright received $7 million worth of orders for reciprocating engines, believed to cover about 475 engines of a new model. It also has Navy orders for 682 R-3350 reciprocating engines.

▶ **Non-Aviation Investments**—The investments made by Curtiss-Wright in non-aviation properties, and their subsequent results, are detailed for the first time publicly. With the exception of its investment in LGS Spring Clutch Corp., the Curtiss-Wright commitments in non-aviation enterprises have been profitable.

Following its purchase of LGS in 1944 for $150,000, Curtiss-Wright has loaned this subsidiary a total of $1,400,000 thus far. In the last three years, LGS cumulative net loss approximated $370,000.

Marquette Metal Products Co., whose main activity is the production of textile spindles, was acquired in 1945 for $4,250,000. During the last two years, this subsidiary showed net earnings of more than $700,000.

The Victor Animatograph Corp., a leading factor in the motion picture camera field, was purchased by Curtiss-Wright in 1946 for about $1,500,000. Victor showed net earnings of $229,155 in 1946 and $322,988 for 1947.

▶ **Management Control** — In the account of management control, it is disclosed that the Curtiss-Wright organization of today is far different from that prior to the war and even during the period of peak war production. The distinguished engineering "teams" which made possible many of the Curtiss-Wright attainments in aeronautical developments are no longer present.

The notable achievement credited to the management is in the manner the company derived the maximum benefits in the reconversion processes by taking advantage of the carry-back tax credits. The company had no unusual commercial development similar to that of Lockheed, Martin or Convair. Its CW-32 cargo plane was confined to narrow limits.

Nevertheless, the company was brought through the reconversion period in excellent financial condition. No other aircraft company can approach Curtiss-Wright from the standpoint of liquidity. However, this gives Curtiss-Wright more of the attributes of an investment company than an aircraft manufacturing enterprise.

The turbulent stockholders' action at the recent annual meeting is considered a factor in influencing the management to declare a special $2 per share dividend on the common stock along with the promise of at least $1 per share for 1949. Of course, the Class "A" has been assured of its $2 per share for both 1948 and 1949.

▶ **Loss of Position**—The failure of the Curtiss-Wright management to develop more acceptable entries in the continuing competition for business.

In 1934, for example, the Curtiss-Wright combine accounted for almost one-half of the industry's entire sales. It accounted for 10 percent by 1947.

It is evident that the company's present scale of operations is much too small to support the existing capitalization. As of Dec. 31, 1947, net working capital amounted to more than $103 million. This was stated to be $60 million in excess of normal requirements. It was this surplus cash position which started the dissident group to seek a special $7 per share disbursement on the common stock.

One approach detailed to cure the excess working capital condition would be for the company to acquire other businesses. While all sorts of enterprises for sale are presumably called to the management's attention, the implication has been that stringent requirements are maintained for the acquisition of any new company.

▶ **Call for Tenders**—Another approach discussed is a further reduction in the capital structure. A start in this direction was made last year in the call for tenders for upwards to 500,000 shares of Class "A" stock at $20.50 per share. Only 204,983 shares were so tendered.

Considerable speculation surrounds another attempt to issue a call for tenders on the Class "A" stock, this time perhaps at around $30 per share. The question exists, however, of possible objections from those former shareholders who previously tendered stock at $20.50 per share. Legally the company appears to be in the clear.

The company's exceptionally strong cash position is reported to be both a source of strength and weakness. For one thing, the management becomes a target of pleas for a special distribution of funds to stockholders, and subject to pressure for the purchase of other enterprises. Until it is known more definitely how Curtiss-Wright proposes to utilize its now excess cash resources, no projection of its future status or potential earning power is possible.

—Selig Altschul

CUSHIONED LANDINGS for the

BELL HELICOPTER

with Electrol Landing Gear Oleos

BELL AIRCRAFT CORPORATION engineers, seeking the best in equipment for their Model 47D Helicopter, specified Electrol Landing Gear Oleos for the vital job of cushioning landings.

Like other essential hydraulic devices, bearing the Electrol name, these specially designed Oleos fully meet the exacting requirements of helicopter operations. They are light in weight, easy to install, service and maintain. And through Electrol's scientific design and advanced production techniques, the economies of manufacture achieved are passed along to the user.

No matter how specialized your needs Electrol hydraulic engineering is sure to prove a time and money saving service in your development work.

• • •

Electrol

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KINGSTON, NEW YORK

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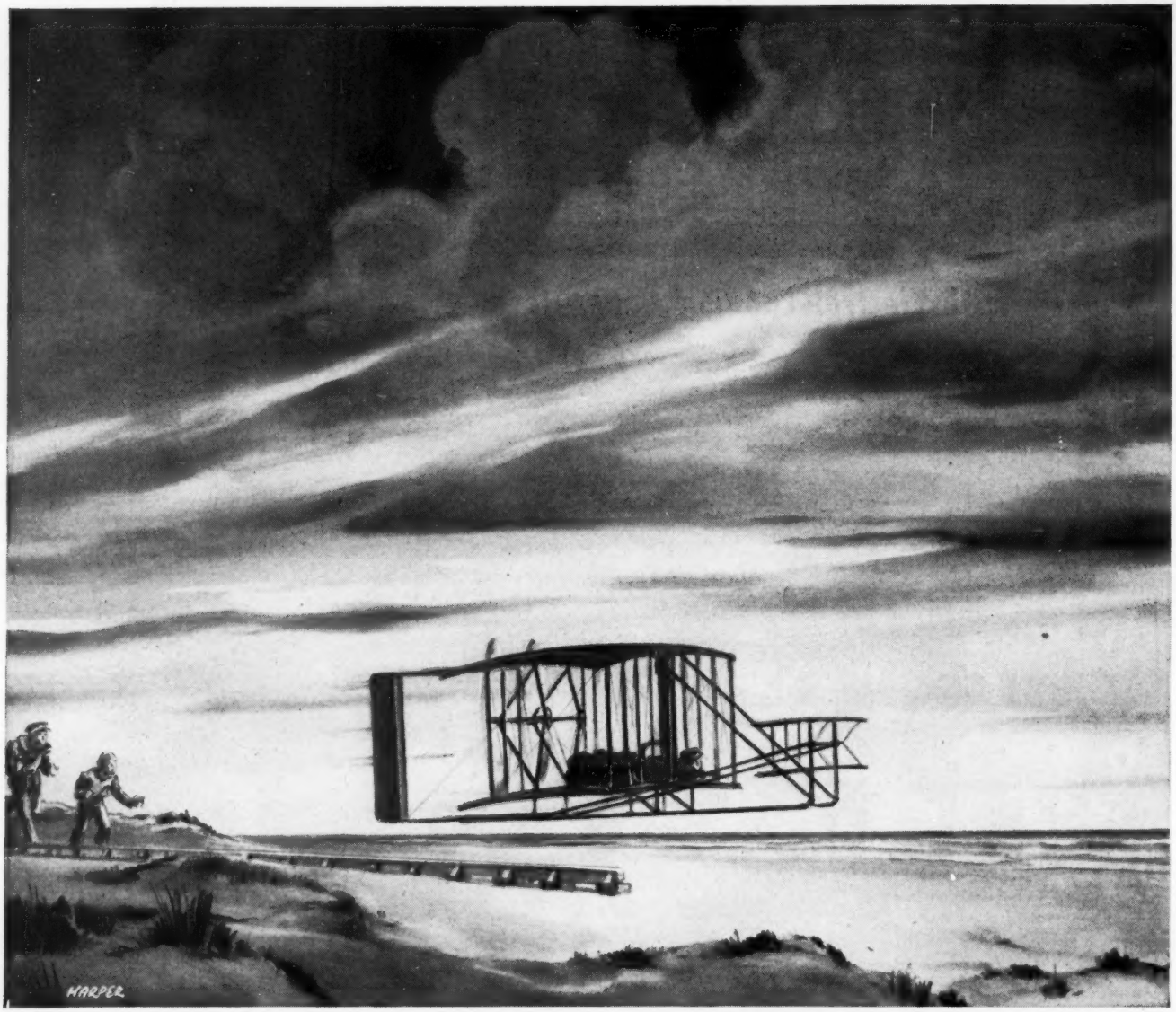
FOR BETTER HYDRAULIC DEVICES



EVER SINCE KITTY HAWK...

The eyes of aviation have been focused on progress. The speed with which aircraft development has advanced is incredible. It is a great tribute to the aviation industry.

And it is a great source of satisfaction to Wolf's Head. For Wolf's Head Oil . . . 100% pure Pennsylvania, premium grade . . . has kept in step with the rapid evolution of aeronautics. Today Wolf's Head is known as the "finest of the fine" aviation oil . . . the oil to depend on for top flight performance. And with good reason. For Wolf's Head Oil is a superior refinement of only the finest Pennsylvania crude. Wolf's Head Oil Refining Co., Inc., Oil City, Pa., New York 10, N. Y.

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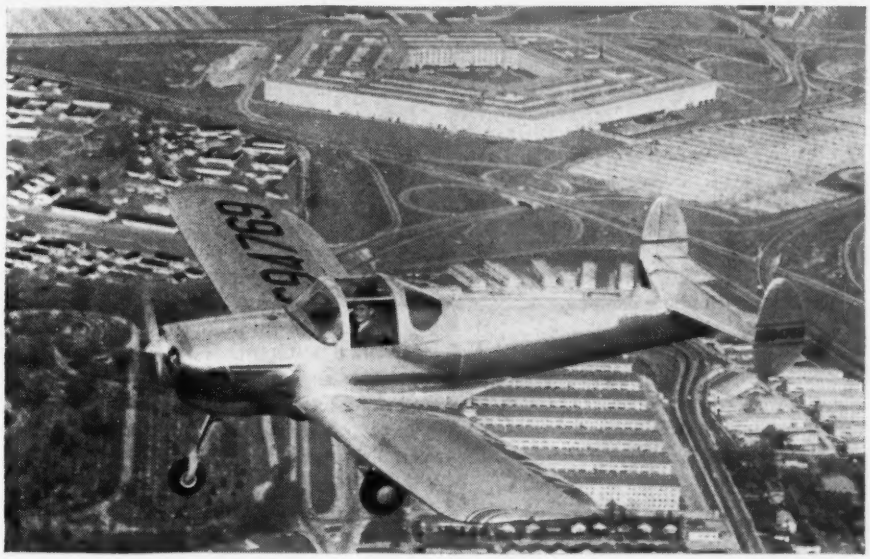


NEW PLANE, NEW SCENE: 1948 Ercoupe over the Pentagon Building. Most popular flight view of previous model used the Washington Monument as a backdrop.

Ercoupe Sales Near 5000 Mark

1948 model of spin-proof plane has further refinements, including shoulder harness and new elevator design.

By Alexander McSurely

While argument continues as to whether the spin test should be taken out of the private pilot's examination, the 5000th Ercoupe, only airplane now being made which is certified by the Civil Aeronautics Administration as incapable of spinning, is nearing completion on the assembly line at Engineering & Research Corp., Riverdale, Md.

Bob Sanders, president and general manager of Sanders Aviation, Inc., world distributor for the Ercoupe, doesn't think the spin test should be removed from airplanes which are capable of spinning. But of course he might be prejudiced slightly. Students who learn to fly the Ercoupe don't have to learn spins since they can't do them in the little two-control metal fuselage plane.

▶ **Sales Totals**—At the end of June Personal Aircraft Council figures showed Sanders Aviation had sold 81 Ercoupes in 1948. Total sales of the plane this year may be around 250 or even higher if foreign markets continue to do well.

Bob Sanders paradoxically sees the slackening of the GI flight program as possibly favorable to more Ercoupe sales. Major emphasis in aviation selling by all fixed base operators largely has been in signing up veterans for flight training. Now it is anticipated that a good share of this sales effort can be redirected toward finding customers who are financially able and willing to buy airplanes for their own use. Ercoupe has been aimed almost exclusively at this market ever since Fred E. Weick, its designer, back in prewar days called it "everyman's plane."

▶ **Selling Point**—A major selling point for the Ercoupe, and one which has possibly been emphasized less than it should be, is the plane's safety record.

The Civil Aeronautics Board's report for 1947 shows no fatal accidents in spinproof planes, and Ercoupe is the only spinproof plane flying in any quantity. Other spinproof planes in use no longer are being manufactured. Only two percent of all Ercoupe accidents in the same period resulted in personal injuries to occupants of the planes, Sanders reports.

This year with a slightly larger nosewheel and a change in the elevator designed to make for easier landings, the Ercoupe should again have a good accident record.

▶ **Safety Feature**—Still another worthwhile safety feature, offered as option equipment for $25 extra, is a shoulder harness. Sanders says the first Ercoupe harness was developed at the suggestion of Hugh de Haven of the Crash Injury Research Organization and that Fred Weick and Mrs. Weick tried out a similar harness during an Ercoupe cross-country trip to California.

Like the shoulder harnesses which are compulsory for high-speed military flying, the Ercoupe's harness holds the upper part of the wearer's body against the seat back, preventing his head from coming forward and striking the instrument panel in event of a crash. A conventional seat belt webbing is used which is fastened to a sturdy attachment point on the airplane's primary structure behind the seat. In ordinary flying, the shoulder harness is not needed, but in the event of a forced landing or other emergency it provides an extra insurance against personal injury which seems well worth the slight extra cost.

Ercoupe, as far as this writer knows, is the only personal plane that now has this equipment available to its purchasers as a factory installation, even at extra cost.

Sanders says that only a small percentage of the 1948 Ercoupes are being ordered with the shoulder harness installed, but with Aircraft Owners and Pilots Association strongly backing use of the additional safety equipment, it appears likely that the number of private pilots wanting shoulder harness will eventually increase to a point where virtually every plane manufacturer will be constrained to make it optional equipment or standard equipment.

▶ **Demonstration Flight**—A brief demonstration flight with Sanders in a 1948 Ercoupe showed it to be still the same easy-to-handle ground and air vehicle that it has been since prewar days. A new ventilator system makes it possible to keep the cockpit enclosure shut even on a hot midsummer day without discomfort, and the noise seemed appreciably less than that in an older model. The quadrant type throttle and trim tab, mounted together at the center of the control panel, were first used on the 1947 Ercoupe but still represent a considerable advance in ease of operation and simplicity over equivalent controls on most light-planes.

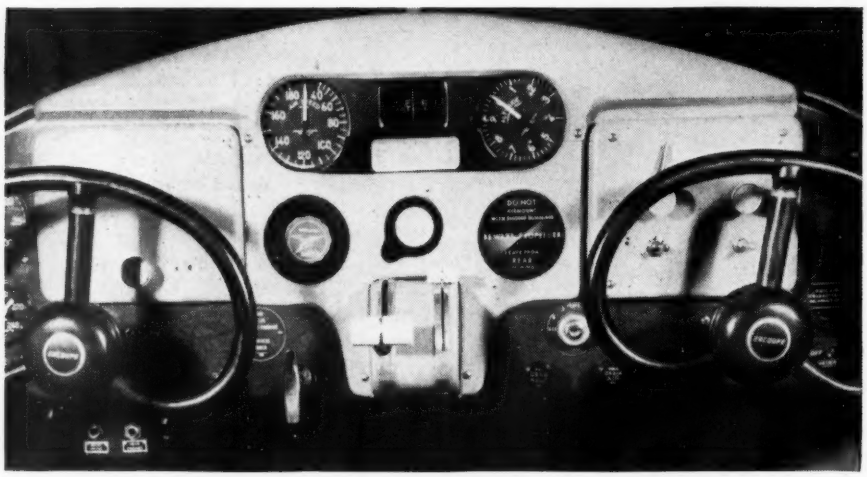
For taxiing it is only necessary to use the wheel, throttle and foot brake in movements quite similar to those used in driving an automobile.

Sanders, who has been flying Ercoupes since he flew tests on the prototype before the war, demonstrated the new elevator arrangement, which permits extra elevator up-travel when needed for landing flareouts.

A preloaded spring stop ordinarily prevents the elevator from being deflected upward beyond a point which would give a normal glide. But if the

Improvements in Ercoupe . . .

Cutout on elevator designed to provide better flareouts in landing.



Instrument panel with neat quadrant throttle and trim tab in center.

Larger (5.00 x 5) nosewheel.

pilot feels need of further upward deflection for flareout, he can get it by pulling the control wheel back through the springstop. A portion of the elevator in the center has been cut out in the area affected by the propeller slipstream. Effect of the slipstream on this part of the elevator had been to reduce the effectiveness of the elevator in a power-on stall.

▶ **Distributor Organization** – Sanders Aviation has 22 distributors and about 400 dealers for the Ercoupe, a large organization considering the total number of planes sold. The parent distributor organization itself operates an Ercoupe distributorship for a territory including Washington, D. C., area, Virginia, West Virginia, and eastern North Carolina. Sanders also has a fixed base operation and an Ercoupe flight school on Erco Field at Riverdale. Featured is a $68 Ercoupe solo course.

The standard 1948 Ercoupe with C85 Continental engine and a two-way Lear radio is pricetagged at $3590, flyaway Riverdale. Available is a wide choice of extra optional equipment for factory installation.

▶ **Future Projects**—As previously reported in AVIATION WEEK, Sanders sees little immediate prospect for manufacturing either the 165-hp. Ercoupe four or the five-place twin-engine Ercoach plane while market conditions and material and labor costs remain at present levels.

In addition to Bob Sanders, the key personnel of the distributing organization includes: his brother Dick Sanders who is assistant general manager; Joseph Redding, domestic sales manager; Julian Zenitz, foreign sales manager; and Jack Hallowell, assistant domestic sales manager.

The sales organization continues in the same relationship with Engineering & Research Corp., manufacturer of the Ercoupe, as that established last fall when Sanders took over the world distributorship for the airplane. Erco produces the airplanes on order from Sanders but has no direct part in the selling operation.

Emergency Squads Take to the Air

Airminded civilians in the north and south are giving their search and rescue units wings.

In Rockland County, N. Y., the sheriff has organized what is claimed to be the first air brigade on record. And at West Palm Beach, Fla., the citizens have formed a similar outfit under the supervision of Palm Beach International Airport officials.

▶ **Volunteer Units**—Formed on a voluntary basis, the units will handle all types of emergencies: combing heavily wooded areas for forest fires, air disasters, sections isolated by floods, etc.

Rockland's group represents an extension of that county's work during the war, when the sheriff maintained an air unit to police the surrounding territory for subversive activities.

The West Palm Beach air arm comprises civilian pilots and airmen whose search missions will cover an area of roughly 4200 sq. mi. This has been divided into 10-sq. mi. grids with a pilot assigned to each.

This Can Go On

In the June 21 issue, AVIATION WEEK ran a picture of what was alleged to be the largest air marker on record—the 30-ft. high designation on top of the War Assets Administration building in St. Louis. Well, it's not so, says Chet Moulton, director of the Idaho Department of Aeronautics. He reports that markers on the Navy Gun Plant building in Pocatello go St. Louis 20 ft. better. They're 50 ft. high.

In Idaho most of the communities are located in valleys surrounded by lofty mountain ranges. Because pilots find it necessary to fly high to clear the peaks, large markers are a must. In Boise, the designations are 35 ft. high.

Idaho expects to have every community in the state airmarked by the fall—providing each of the communities has sufficient roof space.

Wisconsin Airport Program

Wisconsin Aeronautics Commission reports 44 state airport development projects costing $7,202,503 have been put into construction or have reached planning stage since July, 1946.

Turndown by the 1947 state legislature of the commission's request for $2,000,000 for airport state aid has seriously handicapped the program. The $2,000,000 was curtailed to $500,000 by the legislature, and most of this has been used in the 1947-1948 program.

If the state is to share equally with local governments in sponsor cost of federal aid airport projects planned under the 1948-1949 program, an additional $713,750 in state funds will be required. The commission is expected to ask for a deficiency appropriation in this amount from the 1949 legislature.

While eight projects planned for the 1949-1950 program are included in the 44 total, no funds are yet earmarked for these.

New Beechcraft Device

Atlantic Aviation Service, DuPont Airport, Wilmington, Del. has developed a new tailwheel position indicator for twin-engine Beechcrafts. Designed to give the pilot a positive indication when his retractable tailwheel is extended and locked, the device turns on a green light on the panel next to the main gear lights when the tailwheel is down and locked.

The signal light is actuated by a switch mounted by brackets on the after end of the tailwheel slide tube. This grounds the circuit, causing the light to come on when the wheel is fully extended.

The device is regarded as insurance against possible damage to the twin fins and rudders of the Beechcraft which might result from a landing made with the tailwheel still retracted.

Plane Rental Contracts

CAA Aeronautical Center at Will Rogers Field, Oklahoma City, has awarded contracts to three Oklahoma fixed base operators for rental of small planes during the next year. Planes will be used for making flight checks on CAA personnel who report to the center periodically for refresher courses. Contracts provide for a total of approximately 600 hr. of flight time.

Tom Smyer, Ponca City operator, won a contract for Piper Cub trainers; Keith Kahle, Oklahoma City, for Cessna 120; and Clarence Page, Oklahoma City, for Aeronca trainer. Contracts call for the operators also to provide fuel.

BRIEFING FOR DEALERS & DISTRIBUTORS

GATY ON UNDERPRICING—Along with his announcement that the Beech Bonanza pricetag is being marked up to $10,975 flyaway Wichita, Jack Gaty, Beech vice president and general manager, has thrown in some advice to other plane manufacturers.

It is time to call a halt to the underpricing which has cost plane manufacturers many millions of dollars since the end of World War II, Gaty declares. No other industry has made a comparable effort to give its customers super-values, in the face of rising costs. The makers of personal and business planes generally are selling at prices below or equal to those of prewar planes of comparable performance. Gaty calls for a more realistic attitude by the manufacturers and for plane prices consistent with costs.

The Bonanza price hike (16.2 percent) was forced by a steady increase in materials prices. It also covers some recent improvements and refinements on the airplane. In spite of continuing Beech efforts to cut costs through more efficient production, the steady climb in material prices has made direct labor cost a relatively small part of the total cost, the Beech spokesman says.

Basic price factor in a business plane is the cost per airplane mile, and the Bonanza increase when figured on this basis is only a fraction of a cent per plane mile and should be "practically unnoticed by the business user," Gaty declared.

The Bonanza was first priced at $7345 flyaway Wichita when it was announced in August, 1946. The newly announced price increase is the second Beech has made since then.

A general price increase by airplane manufacturers would probably result in curtailing further markets that are already severely restricted. Whether a manufacturer will benefit more from a price increase, or lose more from the restriction of his market that such a price increase would impose, is something for the individual company to decide.

NO AIRCRAFT SHOW IN SPRING—Personal plane manufacturers who have been tentatively examining a possibility for having a national personal plane show next spring last week definitely decided against it at that time because of the unsettled state of the industry. Decision was reached at a meeting of the Personal Aircraft Council in Detroit.

At a subsequent Council meeting the manufacturers will take another reading on the possibility of a fall show. Meanwhile they will continue the present PAC policy of confining participation in these shows to airplane displays only by local distributors and dealers in the region covered.

FLOAT APPROVALS FOR AERONCAS—Approvals by CAA of float installations on the four-place 145-hp. Aeronca Sedan and the two-place 85-hp. Aeronca Super Chief have been announced.

The Sedan uses Model 2000 EDO floats listed at $1535. The airplane itself lists at $4795, making the total price for the floatplane $6330. The manufacturer states that this is approximately $2600 less than the nearest price of a four-place floatplane competitor.

The Aeronca four-placer will takeoff, with no wind, from the water at full 2100-lb. gross weight in 24 seconds, the manufacturer states, and will cruise at full gross weight at 100 mph. At sea level, and at 105 mph. at 5000 ft. The Super Chief, which uses Model 1400 EDO floats, takes off, with no wind, in 22 seconds at full gross of 1400 lb. and cruises at 85 mph.

For seaplanes operating from salt water bases, Aeronca has developed a complete corrosion-proofing process for factory treatment of aluminum and steel components.

FLYNN TO OPA LOCKA—Dick Flynn, widely known fixed base operator at Miami, has resigned from Miami Aviation Center, which he helped establish. Planned as a de luxe private flyer haven for air tourists visiting Florida, the center is still suffering from high building costs, and a considerable part of the development program had to be postponed. Yet the center in its incomplete state offered better satisfaction of customer wants than many a larger airport layout.

Flynn, after a vacation, plans to open a new aviation operation at the big OPA Locka airport near Miami which the Navy turned over to civilian use.

—ALEXANDER McSURELY

AIR TRANSPORT

British Reject 'Home' Transports

"Fly British" policy is dropped, but order for 22 new planes for BOAC goes to Canada rather than U. S.

By Charles L. Adams

After months of public debate and intra-governmental wrangling, Great Britain has conceded the failure of the "Fly British" policy as applied to its deficit-ridden airlines.

But the flip-flop will not mean more business for hopeful American aircraft manufacturers. Instead, the British government has decided to bolster its Empire air routes through the purchase of 22 Canadair DC-4M2s built by the Electric Boat Co.'s Canadian subsidiary in Montreal.

▶**Business Kept in Empire**—London's latest move fulfills a twofold purpose. It forestalls the expenditure of ultra-scarce American dollars for Constellations or other U. S. transports, and it softens the blow to British pride by at least keeping the business within the British Commonwealth.

British Overseas Airways Corp., which has cold-shouldered A. V. Roe & Co.'s Tudor transports throughout the post-war period, emphasized that it has the fullest confidence in future British-built aircraft. But, BOAC continued, "we are gratified that the government has recognized the urgent need for reinforcement during the interim."

BOAC expects that by 1953 the de Havilland jet-propelled Comet and the Bristol 175 will be available. The Brabazon landplanes and Saunders Roe flying boats may be flying about the same time.

▶**Protest Made**—Meanwhile, the British aircraft industry, especially A. V. Roe, is hopping mad over the turn of events. Sir Frank Spriggs, managing director of the Hawker Siddeley group, parent company of A. V. Roe, said the government's position on the DC-4M is "inexplicable."

"Performance of the Tudor is comparable with that of the DC-4M," Sir Frank declared. "The Tudor has the finest pressurized system in the world and can be delivered at least as rapidly as the DC-4M. The country will gain nothing by purchasing more American aircraft. It will lose exports.

"How can the British aircraft industry—one of the most valuable contributors to our export drive—sell its goods abroad when a state-owned corporation refuses to 'Buy British'? Already this refusal has induced one country to cancel an order for $4,000,000 worth of Tudors."

▶**Tests Disappointing**—Abandonment of the "Fly British" policy followed immediately after disclosure by the London government that flight tests on the highly touted Tudor II transport had been "disappointing." The British Ministry of Supply said the tests showed the Tudor II had less range than anticipated and required a takeoff run that would preclude its use at a number of airports on Empire routes.

Forty-five four-engine, 40-passenger Tudor IIs had been ordered from A. V. Roe at a total cost of around $28,000,000. Twenty-six of the planes, allocated to BOAC, had been manufactured but not yet accepted by the carrier.

Estimated cost of the 22 DC-4M "North Stars" is about $14,000,000. The pressurized craft (a modification of the Douglas DC-4) is equipped with British Rolls Royce engines.

▶**Capacity Production**—The DC-4M order is expected to keep the Canadair plant in operation at full capacity for the next 15 months at least. Now that BOAC has purchased the craft, the Canadian manufacturer expects other foreign orders.

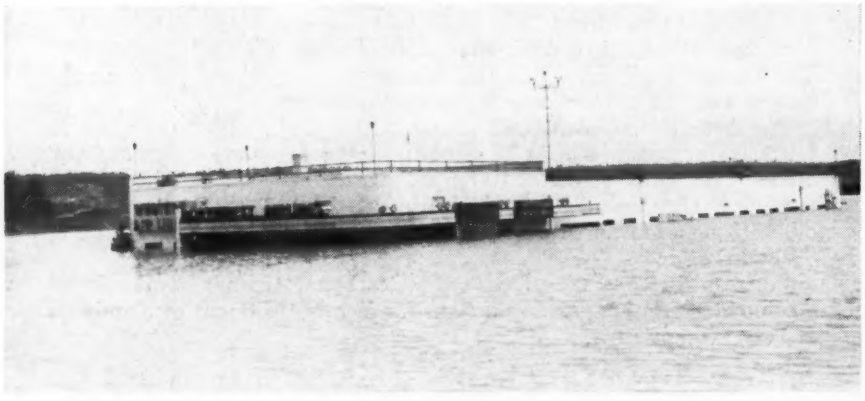
North Stars are now standard equipment on Trans-Canada Air Lines' trans-Atlantic and domestic routes. Besides the 26 DC-4Ms operated by TCA, the Royal Canadian Air Force is operating 17 of the military version. Canadian Pacific Air Lines plans to use the craft on a new trans-Pacific route which it hopes to activate next summer.

Last month's decision on the DC-4Ms was the outgrowth of British inter-departmental battles that didn't stop when the "Fly British" edict was handed down in April, 1947. The Ministry of Civil Aviation kept up its fight on behalf of BOAC, arguing that the carrier should be allowed to choose its own planes if the government ever expected it to get out of the red. But the Ministry of Supply, having won the first round, continued to carry the ball for the British aircraft industry. The Treasury, watching the dwindling supply of dollars in the public purse, stood by to step in as the final arbiter.

▶**Dollar Problem**—Unable to overcome the problem presented by its lack of U. S. dollars, the British found a way of getting Canadian dollars. The Canadian government agreed to defer for a short period Great Britain's payments on a large interest-free loan made by the Dominion in 1942. Thus Canadian dollars which otherwise could be due from Great Britain immediately will be used to purchase DC-4Ms.

BOAC's heavy losses during the post-war period have been declining recently, and Whitney Straight, managing director, said the corporation will make an intensive drive to tap American traffic. Use of the DC-4Ms, in addition to the Constellations now operating on the trans-Atlantic run, is expected to lure the all-important U. S. dollar.

▶**Fleet Described**—By the end of 1949, BOAC expects to have the following landplane fleet: six Boeing Stratocruisers, eleven Constellations, 22 Canadair



FLOODED PORTLAND TERMINAL DRIES OUT

Muddy water, which covered Portland, Ore., Airport to a depth of 12 ft. during June receded gradually last month, and the scheduled airlines using the field are pushing plans for resumption of service. Damage in most cases was less than expected, and United Air Lines hopes to be operating out of Portland Airport this month. Earlier, Northwest Airlines and West Coast Airlines had predicted the field might not be usable before late September. The flood forced Northwest, West Coast, United and Western Air Lines to serve Portland through Salem and Troutdale, Ore., airports, 56 and 15 miles, respectively, from Portland.

DC-4Ms, 25 Hermes IVs and 15 Tudor IV freighters. Hythe and Plymouth flying boats will be retired progressively as soon as the new landplanes can take up the load.

Solent flying boats on the South African route will operate into 1950 and beyond if justified by financial results. The Yorks, Lancastrians and Liberators will be retired in the near future, and use of Dakotas by BOAC will be confined to local Middle Eastern service.

▶ **Whittle Appointed**—Shortly after the DC-4M purchase announcement, BOAC disclosed the appointment of Sir Frank Whittle, outstanding jet engine designer, as advisor on operation and development of gas turbine aircraft.

At the same time, the corporation reported its organization had been streamlined into only two divisions—western and eastern. The western division will be under Vernon G. Crudge, who has held the post of Atlantic division manager. Whereas the Atlantic division has encompassed principally the North American Continent and has been concerned with routes between North America and the United Kingdom, the new western division will be responsible for the entire area westward from London to Australasia.

UAL Plans to Meet Flight Engineer Rule

United Air Lines has disclosed plans for using combination pilot-engineers as third crew members on its fleet of DC-6s.

The move is in line with a recent Civil Aeronautics Board order requiring employment by Dec. 1 of flight engineers on DC-6s, Boeing Stratocruisers and other aircraft certificated for more than 80,000 lb. takeoff weight. Other carriers using DC-6s have not revealed their programs for compliance with the new Civil Air Regulation, and the Air Transport Association is fighting for recall of the order (AVIATION WEEK, July 26).

▶ **Second Officer** — UAL's new crew man will be known as a second officer, serving in the cockpit with the first officer and captain. To qualify for his position, he will be required to have at least 500 hr. of pilot time along with a commercial certificate and instrument rating, a flight engineer's certificate and an aircraft radio operator's license.

A four-months' training course will be given each second officer. The first class of about 60 will open at Cheyenne, Wyo., this week, to be followed within two weeks by another class of 60. About 120 second officers will be needed to man United's 39 DC-6s by Dec. 1.

Cutrate Fares Again Under Fire

Certificated lines claim loss of traffic to coast-to-coast "irregular" carriers working with travel agencies.

The certificated airlines are mounting a strong counteroffensive against nonscheduled carriers which have captured a substantial amount of transcontinental passenger traffic through cutrate fares vigorously promoted by cooperating ticket agencies.

At present, the attack is being aimed at specific "irregular" operators cited by the Civil Aeronautics Board for violating the nonscheduled exemption, and against the ticket agencies whose activities allegedly "are no more than a device to make a mockery of the regulation."

"But there are indications that the certificated lines may launch a frontal assault on the nonscheduled exemption itself unless CAB moves quickly and forcefully against violators.

▶ **Standard Case Eyed**—With Edward Ware Tabor's Trans Atlantic Airways now inactive as a result of a CAB crackdown (AVIATION WEEK, June 7), American Airlines and United Air Lines have concentrated their fire on Standard Air Lines, Long Beach, Calif. At the same time, American has called on the Board to institute proceedings against the ticket agencies on the ground that they have contributed materially to the "wholesale flouting" of the nonscheduled exemption.

Both American and United have asked to intervene in CAB's case against Standard. They assert the line is diverting "many thousands of dollars monthly" from the certificated carriers. American said Standard's violations of the nonscheduled exemption have been so flagrant that its letter of registration should be suspended immediately without the formality of a hearing.

"To allow this case to go to hearing without suspension will permit Standard and other irregular carriers profiting by the experience of this test case to operate unscathed in the peak traffic season," American declared. "Immediate action is necessary because toleration by the Board can only lead to an expanded evil and because the present evil is already menacing the continued stability and solvency of an important segment of the industry."

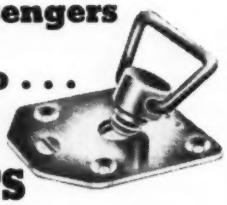
Standard is fighting to keep American and United out of the case. It said that proceedings conducted by CAB's enforcement section have an

AIRMAIL EXPEDITER

Los Angeles Airways, which operates the nation's only certificated helicopter airmail route, is taking pains to see that time saved through use of its Sikorsky S-51s is not lost in slow ground handling of mail bags. The carrier is using a light, maneuverable Salsbury "Turretruk" for loading and unloading at Los Angeles Municipal Airport. It can handle mail loads up to 2000 lb. and hauls two trailers with a similar capacity.

from passengers

to cargo . . .



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atmosphere of fair play which disappears when the major air carriers are placed in a position from which they may, through implementation of government machinery, seek to put all other participants out of business.

► **Survey Cited**—In striking at the transcontinental nonscheduled operators, American and United cited a survey which estimated the independents are carrying at least $10,000,000 worth of traffic annually. The survey indicated that if all transcontinental passengers patronizing nonscheduled operators traveled via certificated lines the result would be $18,000,000 worth of additional business annually for the latter (in view of the fare differential of $99 for the independents against $143.15 for the regular carriers). Result, the study asserted, would have been the elimination of the combined domestic loss of over $14,000,000 incurred by American, United and TWA in 1947.

Nonscheduled operators and some CAB officials describe the conclusions drawn by this survey as fanciful, since 1947, unlike 1946 and 1948, was a poor year for transcontinental "irregular" lines. Actually, nonscheduled coast-to-coast operators have grossed only a small fraction of $10,000,000 in any twelve-month period.

► **Traffic Grows**—Nevertheless, the "irregular" operators have become a significant factor in transcontinental air transport during recent months. Several have made substantial profits. As a result of consolidated traffic solicitation through ticket agencies, business has gained while unit sales costs have been cut. Unlike their certificated competitors, the independents generally fly only when they have good loads.

While certificated airline fares increased about 20 percent last year, and now apparently are headed upward again, fares offered by nonscheduled carriers have dropped.

► **Ticket Agencies Hit**—Meanwhile, American Airlines has vigorously protested to CAB against the activities of New York and Los Angeles ticket agencies which together with the nonscheduled operators are "knowingly participating in a conspiracy to violate the nonscheduled exemption." AA said groups of "irregular" air carriers on the transcontinental run are cooperating under unspecified arrangements to furnish regular services to the public through the medium of the ticket agencies.

"It is possible," American declared, "for a member of the general public in New York to make routine reservations to specific points on the West Coast through at least two agencies, Sky Coach Limited (headed by Edward Ware Tabor) and Airline Reservations, for flights leaving each day of the week with the possible exception of Sundays. Reservations may be obtained for precise days as far in the future as a month and a half."

► **Methods Differ**—AA noted that the agencies sometimes gave the name of the airline to be used; in some cases named two or more operators as possible carriers; in a few instances the agency was unable to give the carrier's name; and in several cases the agency represented it was the carrier itself. "Service has been offered on a named airline which has no letter of registration and is probably non-existent," AA declared, adding that there have been numerous misrepresentations as to type of equipment, coupled with shifts of passengers from carrier to carrier without warning.

Airplane Charters by Mercer, Inc., Air America, Standard Air Lines and Viking Air Lines were cited as operating through Airline Reservations. Great Lakes Airlines, Airline Transport Carriers and Viking reportedly operate through Sky Coach Limited.

American charged that the ticket agencies directly and indirectly hold themselves out to the public through advertising as furnishing the transportation in their own names. This being the case, AA continued, the agencies are acting as indirect air carriers and violate the Civil Aeronautics Act by not holding a certificate.

Freight Rates

CAB sets 8 cent floor under commodity rates to foster backhaul loads.

Airfreight rates considerably below the general minimums which became effective July 1 have been authorized by the Civil Aeronautics Board to encourage development of backhaul traffic.

New specific commodity minimums were set by the Board on a temporary basis and will apply to seven types of cargo moving east or north from California and north or east from Texas. The rates range downward from the former 13 cents a ton mile floor to a low of eight cents a ton mile.

► **Unbalanced Traffic**—Both certificated and noncertificated carriers had asked CAB to approve the specific commodity rates to correct unbalanced traffic flows. Among the petitioners were American Airlines, United Air Lines, Delta Air Lines, National Airlines, Slick Airways and the Flying Tiger Line.

While some of the certificated carriers recognized a need for stimulating

backhaul traffic, they favored a higher floor for specific commodity rates than did the all-cargo lines. American asked for specific commodity rates for eastbound and northbound traffic on all but nine commodities, with a minimum tariff of 11½ cents a ton mile. Slick sought new minimums ranging down to 6.8 cents a ton mile on 28 specific commodities.

► **Low Rates Criticized**—American asserted that the rates proposed by both Slick and the Flying Tigers were unnecessarily low and uneconomic. Willis Air Service, an uncertificated all-cargo line, found itself in the strange position of agreeing in part with the stand of American.

According to Willis, all-cargo carriers must achieve an overall yield of at least 15 cents a ton mile to avoid heavy deficits. It said that all proposals to go below CAB's 13 cents a ton mile general commodity minimum should be advanced cautiously. Willis added that the specific commodity rates favored by Slick and the Flying Tigers were too general in nature, too broad in scope and "too unpredictable as to consequences."

Eastern Air Lines had asked CAB to defer action on specific commodity rates pending experience with the general minimums of 16 cents a ton mile for the first 1000 ton miles and 13 cents for all ton miles in excess of 1000 in any one shipment. But the all-cargo lines indicated they were losing considerable business on eastbound and northbound backhauls every day CAB delayed.

► **Comparable Tariffs Seen**—Although they consider the specific commodity minimums too low, the certificated airlines generally will probably meet them where they are adopted by their all-cargo competitors. The specific commodity tariffs can be filed on five days' notice.

In aggregate, the new specific commodity minimums are closer to the desires of the all-cargo carriers than to the wishes of the certificated lines. Products which will move eastbound and northbound at rates about 75 percent of the general commodity minimums include drugs and biologicals, fruits and berries and seafood. On large shipments from California to New York, these items can now be transported at a charge as little as 10 cents a ton mile.

Products which will move eastbound and northbound at about 60 percent of the general commodity minimums are cosmetics and toilet preparations, nursery stock, fresh vegetables and vegetable plants. Large shipments of these types of commodities can now be sent for a minimum of eight cents a ton mile.

Robinson Gets Certificate

Robinson Aviation, Inc., New York, has been issued the feeder certificate for which it was designated in CAB's Middle Atlantic area decision last February.

In authorizing Robinson to start operations, the Board overruled protests of the Post Office Department, which had argued that the carrier would be activating several hundred new route miles while bringing air service to only two new points. A week previously, CAB had disregarded Post Office protests in issuing a feeder certificate to Iowa Airplane Co., Des Moines (AVIATION WEEK, July 5).

Robinson's initial service from New York to Albany and Buffalo will bypass Batavia, Geneva, Auburn and Oneonta because of inadequate airports. DC-3 equipment to activate the Robinson links is already on hand.

NAL Leases C-46s

National Airlines is expanding its freight service with two C-46s leased from the Air Force.

President G. T. Baker said the Curtiss Commandos will form the nucleus for NAL's cargo fleet. The craft are now being fitted for freight operations at National's Miami maintenance base.

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AIRviews

Replacement spares for the DC-3, DC-4 and DC-6 commercial models and C-47 and C-54 military models, valued at more than $2,000,000 a month, are currently being shipped to some 350 customers operating in excess of 3,000 Douglas airplanes in all parts of the world.

To handle this large flow of spare parts quickly and efficiently, Douglas maintains a capable spare parts organization of 400 people. Each month they speed deliveries of some 20,000 items weighing approximately 650,000 pounds. And to facilitate operations, modern tabulating methods were recently introduced throughout the Douglas spare parts division.

Also, increasing use is constantly being made of air freight in the dispatching of spare parts. Today 60 to 75 per cent of all commercial spare parts are sent by air.

We here at Douglas realize full well that only an airplane ready and able to fly is a profitable or useful airplane. That is why particular attention is being paid to supplying correct spare parts in the shortest possible time. We will appreciate receiving from you at any time suggestions for the improvement of our spare parts service.

Donald W. Douglas

PRESIDENT
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SANTA MONICA, CALIFORNIA

Cargo Contracts

USAF calls on six U. S. carriers to help with Berlin airlift.

The American attempt to supply Russian-blockaded Berlin by air has generated a second batch of business for U. S. commercial airlines.

Additional contracts are in the offing if the emergency persists, according to Air Force officers. The Military Air Transport Service is unable to cope with the overloads arising from the Berlin situation.

Latest contracts with six airlines involved shipment of about 100 engines weighing one ton each from Westover Field, Mass., to Frankfurt, Germany, between July 14 and 21. The engines meet emergency requirements of C-54s and C-47s used on the Berlin supply route.

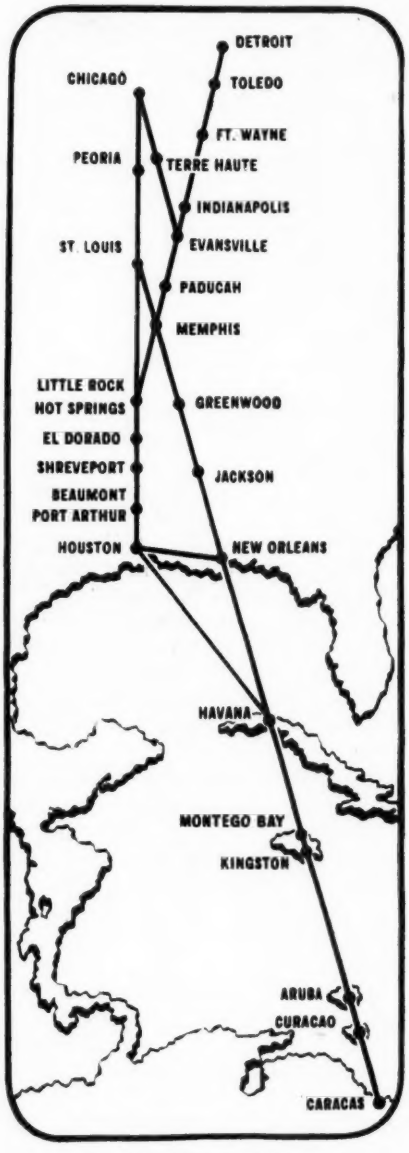
▶**Traffic Apportioned**—Seaboard and Western Airlines was slated to make six C-54 flights during the eight-day period, Transocean Air Lines and Alaska Airlines four C-54 flights each, Pan American Airways and American Overseas Airlines one C-54 flight each, and Trans-Caribbean Air Cargo Lines one C-46 flight. During the first movement in June (AVIATION WEEK, July 12), Seaboard and Western flew four planeloads of spare parts for C-54s to Frankfurt, Alaska Airlines and PAA two planeloads each, and American Overseas one planeload.

Total tonnage of the June movement was about 62 tons, compared to over 100 tons for the shipments which were to be completed last month. Contracts were handled by the Transportation Division, Office of the Deputy Chief of Staff for Materiel, U. S. Air Force, Pentagon Building, Washington, D. C.

Use of uncertificated carriers for most of the trans-Atlantic airlift indicated that U. S. flag lines could not take care of all the traffic in the time required. It has been Air Force policy to use certificated operators when they have the capacity available and offer rates not too far above those quoted by their uncertificated competitors.

▶**TWA-S&W Scrap**—Meanwhile, Seaboard & Western has accused U. S. flag lines, particularly TWA, of unfair competitive practices to force contract carriers off the trans-Atlantic run. Previously, (AVIATION WEEK, June 7), TWA had charged S&W with violating the nonscheduled exemption by making frequent and regular flights to Europe, failing to file proper tariffs and reports with CAB, and conducting contract operations that may not have been completely bona fide.

S&W alleged that U. S. certificated airlines have adopted a policy of refusing to service planes of nonscheduled carriers operating to Europe although they do furnish such service to any scheduled carrier, including foreign flag operators. "CAB might find it appropriate to investigate why TWA and other U. S. scheduled carriers maintaining extensive bases and repair



C&S PUSHES SOUTH

Another link between the U. S. and South America is being forged by Chicago & Southern Air Lines. Activation of the carrier's route southward from Havana, Cuba, to Caracas, Venezuela, was scheduled for late last week. Three roundtrips weekly will be flown from New Orleans and Houston to Kingston, Jamaica, and Caracas with 50-passenger DC-4s. C&S was certificated for the South American route in May, 1946, and has been flying as far as Havana since September, 1946. Map shows the carrier's entire domestic and overseas system.

shops overseas do not try to get all the work possible in order to utilize these facilities economically," Seaboard and Western declared.

The contract carrier said it has information that TWA circulated a communication to its employes specifically forbidding them to give assistance to planes of nonscheduled carriers. "At one time," S&W continued, "we reached an agreement with Swissair [Swiss Air Transport Co.] for maintenance and inspection work on our planes at Geneva. Upon information and belief, TWA, with malice and with specific intent of preventing Seaboard & Western from competing in any manner whatsoever, brought pressure on Swissair [which was then TWA's general agent for Switzerland] and compelled that company to refuse to consummate the maintenance agreement which already had been reached orally."

NAL-Delta Merger Still Hanging Fire

National Airlines President G. T. Baker has broken the silence surrounding the proposed NAL-Delta Air Lines merger with a statement that published reports on the deal have far outstripped actual negotiations.

Baker said National and Delta had not reached the point of considering organizational plans for the merged company or of deciding such details as which individuals would occupy key positions, where headquarters would be established and what disposition would be made of various properties and installations. His announcement that the merger "is still in a preliminary stage" confirmed AVIATION WEEK's story of July 5 that arrangements were "far from consummated."

► **Plans Described**—The NAL president also denied reports he would retire from active management to the role of stockholder if merger negotiations with Delta are successful. "While it is true that within the next few years I hope to assume a less active part in the affairs of National or the consolidated company which may result from our discussions with Delta, it certainly does not follow that I would retire from active management," Baker told employes. "My interest in the company financially and otherwise, and in the people whom I represent, would certainly preclude any such possibility."

Baker declared a Delta-National merger is a desirable objective from every viewpoint and would create a sounder operation—both economically and from the standpoint of public service.

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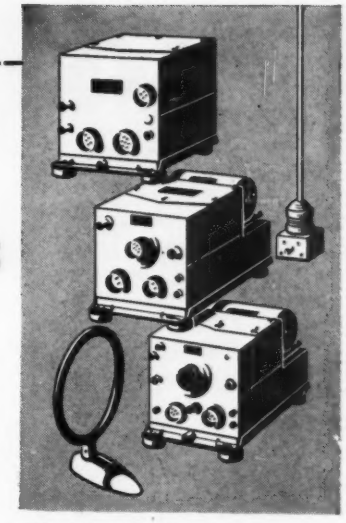

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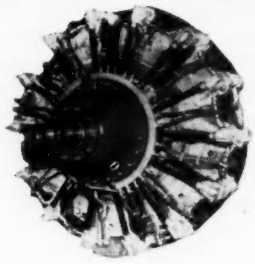

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SHORTLINES

▶**Aerovias Nacionales de Colombia**—Has been recommended by a CAB examiner for a foreign air carrier permit to operate from the coterminals Bogota and Barranquilla, Colombia, to New York via an intermediate point in Jamaica and Miami. Owned 47.6 percent by Pan American Airways, Avianca currently has authority to serve the Canal Zone and Miami. Present flight equipment includes three DC-4s, three C-54s, 16 DC-3s, eight C-47s and three PBY-5As.

▶**Alaska Airlines** — Has been granted $642,000 in mail pay for services between Sept. 4, 1945, and Dec. 31, 1946. CAB said the compensation is equal to 48.3 cents a revenue plane mile flown on Alaska Airlines' certificated routes and gives the carrier a seven percent profit after taxes on its recognized investment.

▶**American Airlines** — In conjunction with American Overseas Airlines is flying 300 loaves of bread daily from Los Angeles to the U. S. Olympic team in London. The bread is being contributed by the president of a Los Angeles bakery, who is an amateur sports enthusiast.

▶**Capital** — Company's mail rate has been adjusted upward by CAB in accordance with the show cause order issued in June (AVIATION WEEK, June 28).

▶**Eastern**—Estimates it will lose $1,950,000 annually in passenger revenues if CAB approves the National Airlines-Capital Airlines equipment interchange agreement. . . . EAL late this summer plans to cut cargo rates 25 percent on shipments of gift fruit packages from Florida to northern cities.

▶**Empire**—Established new traffic records in June, flying 600,000 revenue passenger miles during the month against 221,000 in the same 1947 period.

▶**National**—Late last month planned to inaugurate a fast new connecting service between Miami and Los Angeles. Direct connections with Delta Air Lines at New Orleans and American Airlines at Dallas make the Miami-Los Angeles trip now possible in 13 hr. 20 minutes. . . . NAL is now serving the city of Havana exclusively with its DC-6 equipment.

▶**Pan American**—A PAA DC-3 bound from London to Vienna last month was diverted from its run at Munich to fly food into Berlin. A company official said the plane was not commandeered. . . . Pan American has asked CAB permission to serve San Juan, Puerto Rico, from Boston, Philadelphia and Baltimore-Washington as well as from its present terminal at New York.

▶**Trans-Caribbean** — President Roy Chalk visited Rome last month to arrange for participation in the transportation of some 250,000 Americans expected to visit the Italian city in 1950—the year for decennial Vatican pilgrimages. Chalk plans to form a new carrier, Vatican Airlines, for the pilgrimages.

CAB SCHEDULE

Aug. 2—Hearing on CAB's investigation of Trans-Atlantic Airways. (Docket 3358.)

Aug. 5—Hearing on reopened TWA-Delta equipment interchange agreement Case. (Docket 2346.)

Aug. 11—Hearing on National Airlines route consolidation case, postponed from July 27. Docket 2967.)

Aug. 16—Prehearing conference on CAB's investigation of Hughes Tool Co.'s acquisition of further control of TWA. (Docket 2796.)

Aug. 19—Hearing on amendment of China National Aviation Corp.'s foreign air carrier permit. (Docket 3402.)

Sept. 13—Hearing on Board's investigation of free and reduced rate transportation. (Docket 2737, et al.)

Oct. 4—Hearing on route consolidation applications of American, Eastern and TWA. (Docket 2581, et al.)

Dec. 1—Hearing on additional service to Puerto Rico. (Docket 2123, et al.)

PICTURE CREDITS

British Information Service—22; International News—20; McGraw-Hill World News—11; USAF—10, 15; USN—14.

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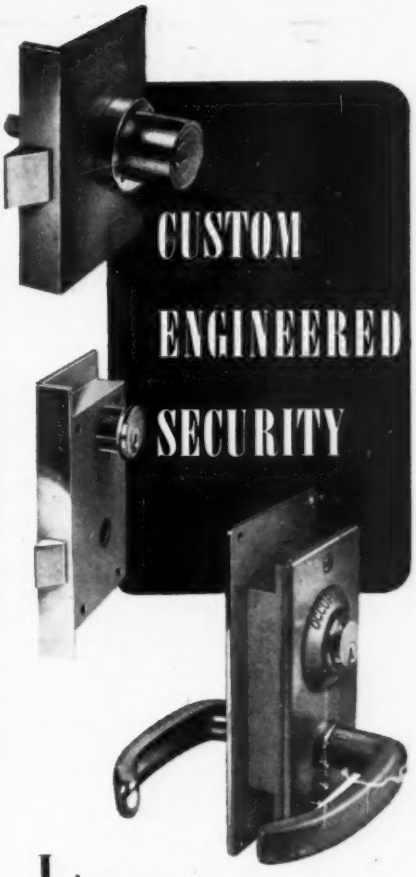

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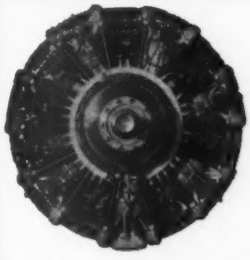

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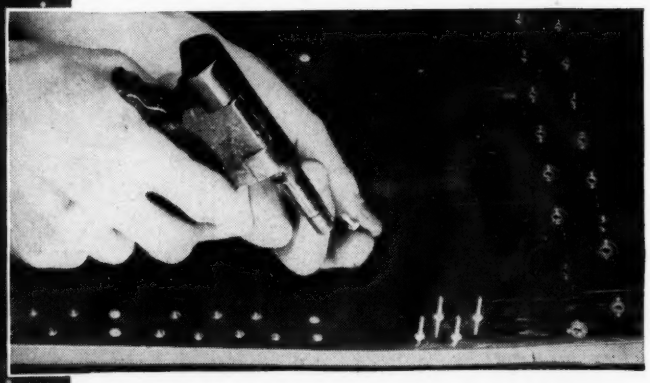

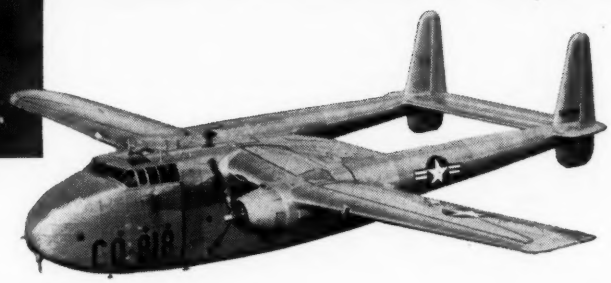

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(Used or Surplus New)
For Sale 46, 47

L. S. BRACH LABELS ELECTRICAL UNITS

Uses Topflight Tape because it sticks at once and stays

The L. S. Brach Manufacturing Co. of Newark, New Jersey, manufactures many components used in electrical and radio assemblies and hook-ups. Typical is one of the applications shown here.

Operator Rocco M. Matullo is shown successively affixing two pressure-sensitive labels to a neon argon high speed duplex lightning arrestor, before shipment to the Western Railroad Supply Co.

Neat, attractive, adequate

Quickly applied in a one, two, three motion, one end of tape is sealed over the other. Clean, sharp printing and lustrous appearance make positive information easily read, for the life of the unit. No lost time, mistakes, or bewilderment because labels are torn-off or defaced.

Topflight Tape has pioneered in printed pressure-sensitive cellophane for industrial uses.

TOPFLIGHT TAPE COMPANY

ERWIN HUBER, *President*

YORK PENNA.

LETTERS

Shannon Crash Comment

To the Editor:

We have read your article in AVIATION WEEK, May 24, regarding the PAA Shannon crash of Apr. 15, 1948. It refers to the "unsatisfactory report" on the copilot's instrument flying for getting lost over Shannon, Eire, at 500 ft., and makes no mention of the faulty instrument panel light nor the lack of approach lights at this airport that is known to be located in an extremely dark location.

We consider these faulty instrument panel lights and the lack of approach lights as prime factors in this crash.

THEO. G. LINNERT
Engineering Department
Air Line Pilots Association
Chicago, Ill.

Sir Miles Denies It

To the Editor:

May I draw your attention to the fact that your representative who saw me in Pasadena . . . in May has completely misinterpreted me (June 7 issue) in so far as the Brabazon is concerned.

What I actually said was to the effect that the Brabazon was a most interesting experiment in giantism and that we were looking forward very much to proof of its commercial feasibility. . . .

MILES THOMAS, Deputy Chairman
British Overseas Airways Corp.
London, England

(Scholer Bangs, Los Angeles Correspondent, replies: "Because Sir Miles had seen the Constitution and XC-99 I was especially attentive to his reply to direct questions concerning the Brabazon. My recollection is that I heard him accurately as expressed in the story I wrote. I have no doubt that he looks forward to 'proof of its commercial feasibility'. Also, I suspect that he may have drawn hot water over the vigor of his comments to me. As to 'interpreting' what he said, how can it be viewed as other than discrediting to pass over the Brabazon as 'an interesting experiment in giantism'? I have no objection to running his letter if you feel it is indicated to preserve international amity.")

No Dog House for PAA

To the Editor:

As you may have gathered by our wire yesterday, we are more than a little concerned regarding the article, "No Dull Moments in Latin America," which appeared June 28. . . .

The last paragraph: "KLM also does well on the Caracas-Miami run, many oil people preferring it because they're tired of PAA's 'take-it-or-leave-it' attitude" certainly seems unreasonable.

Also . . . the article states that "PAA has been needling the government of Panama to get the exclusive management concession for Tocumen."

Pan American's only interest in obtaining such a concession is to improve service wherever the airline serves the traveling public. . . . You are aware of the lack of satisfactory service and facilities at many airports in those countries. That is one of the reasons why PAA has followed a policy to operate and staff airports wherever possible to assure handling of passengers with a minimum of complaints.

It strikes us that the expression "needling" is a rather undignified way to describe a negotiation under way. It could easily be misunderstood and certainly was not intended to put us in a very good light.

If these were the first instances of shall we say "unfriendly" reference to PAA we wouldn't bother calling the matter to your attention, but there have been other cases during the past few months which prompts us to wonder whether PAA has slipped into AVIATION WEEK's doghouse. . . .

S. ROGER WOLIN
Public Relations Manager
Latin American Division
Pan American Airways
Miami, Fla.

(AVIATION WEEK maintains no dog house for PAA or any other readers. It has a private dog house for members of the staff who commit errors. But in this case we cannot incarcerate the writer of the story in question. He knows his Latin America, and AVIATION WEEK will back him up until he is proven wrong.—Ed. Note.)

Discussions—Not Negotiations

To the Editor:

April 26 you published a notice under "Briefing Production News" which reads as follows:

"Piasecki Helicopter Corp., Morton, Pa., is negotiating with Helicopter Engineering Research Corp., Philadelphia, for the license of several Piasecki basic helicopter patents to HERC including a design patent for a Piasecki helicopter which closely resembles the HERC JOV-3 now being flown. Officers of the latter firm are all former Piasecki employees . . ."

Since to date no correction has been issued either by AVIATION WEEK or PHC we request the publication of the following correction. . . .

"Helicopter Engineering Research Corp., Philadelphia, manufacturer of the successful JOV-3 tandem helicopter, was approached by Piasecki Helicopter Corp. several months ago for a possible exchange of patents and features. Although HERC has dedicated itself to a policy of freely sharing its new features with any friendly and cooperative manufacturer the fact is that it has entered into no negotiations with PHC for the reason that the latter company has exhibited an unreasonably hostile attitude since the date of the first public flight of the JOV-3. Under such circumstances it is considered that negotiations would be fruitless.

"Any statement or implication that the HERC JOV-3 infringes on a Piasecki design patent appears to be entirely without foundation and fact.

"Officers and engineering staff of HERC are comprised of men whose academic and professional record make them eminently qualified to independently create, design and develop any type of rotary wing aircraft and its components."

D. K. JOVANOVICH, PRESIDENT
Helicopter Engineering Research Corp.
Philadelphia, Pa.

Subscriber Complains

To the Editor:

In recognition of your continued excellent work first as AVIATION NEWS and now as AVIATION WEEK I am pleased to have you renew my subscription.

However, I do not think it is fair to the old time, loyal subscribers to give out information to newspaper reporters before we receive it ourselves via our subscription. For years we have known and appreciated the fact that you were always first with the best and latest news. Suddenly the press discovers this fact and comes to you for pre-release stories. Consequently, when we get our copy of AVIATION WEEK, the news it contains is no longer "news" but second hand information because we have already read it in our daily paper five days before we received our copy of AVIATION WEEK. Let the press wait the same as we do.

JOHN R. MUELLER
6703 Holabird Avenue
Baltimore 22, Md.

(It is true that AVIATION WEEK has received wide publicity in hundreds of U. S. newspapers and on radio news broadcasts recently on the confirmation of the XS-1 story, the supersonic accomplishment of the XF-86, and the latest data on Russian jet aircraft. But the press seldom has space to reprint all of any one story, and every issue of AVIATION WEEK contains many other items and photographs.—Editor)

FSF Needs Encouragement

To the Editor:

We of the Flight Safety Foundation are grateful for the expression of confidence contained in your editorial, "Important Step in Air Safety." Encouragement like yours is needed in the presence of the problems which face and humble us.

We shall work strongly to merit your trust in our ability and integrity. . . .

The idea of exchanging information on accident potentials between the operators and the manufacturers originated at an industry meeting held last September. The airlines and aircraft manufacturers were represented . . . and strongly urged the interchange of information that would lead to greater safety.

JEROME LEDERER, President
Flight Safety Foundation, Inc.
165 E. 72nd St.
New York 21, N. Y.

MICRO *Precision Switches*

have the precision...

the dependability

the long life

that the aviation industry can rely upon

as used in
Sperry A-12 Gyropilot*

MICRO...
first name in
precision switches

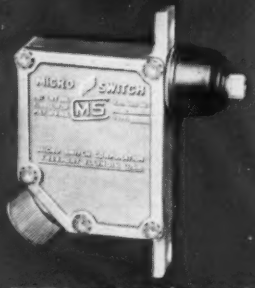
*Reg. TM

The V3-1 MICRO precision switch as used in the Sperry A-12 Gyropilot is suitable for use where limited space is available. It is enclosed in a plastic case and is light in weight. Terminals are heavy gauge brass with number 4 screws and lock washers.

D-C Ratings

28.5 volts, 6 amperes at 45,000 ft. altitude
28.5 volts, 10 amperes at sea level
Probable contact life . . . 25,000 operations

MICRO die cast enclosed switch is compact. It combines ruggedness with light weight and high electrical capacity.



MICRO Type "HN" housed switches provide a light-weight, compact, high-capacity switch with long life expectancy.

Selecting a switch to meet exacting requirements is made possible with the complete MICRO line. There are 3900 varieties of shapes, sizes, weights, actuators and electrical characteristics to meet all the varied requirements of design engineers.

Exact repeatability of operating point . . . long life and dependability are outstanding features.

MICRO engineers are specialists devoted to solving switch problems. Their wide experience is a valuable aid that is at your service upon request.

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MICRO MS SWITCH
A DIVISION OF FIRST INDUSTRIAL CORPORATION
FREEPORT, ILLINOIS, U.S.A.

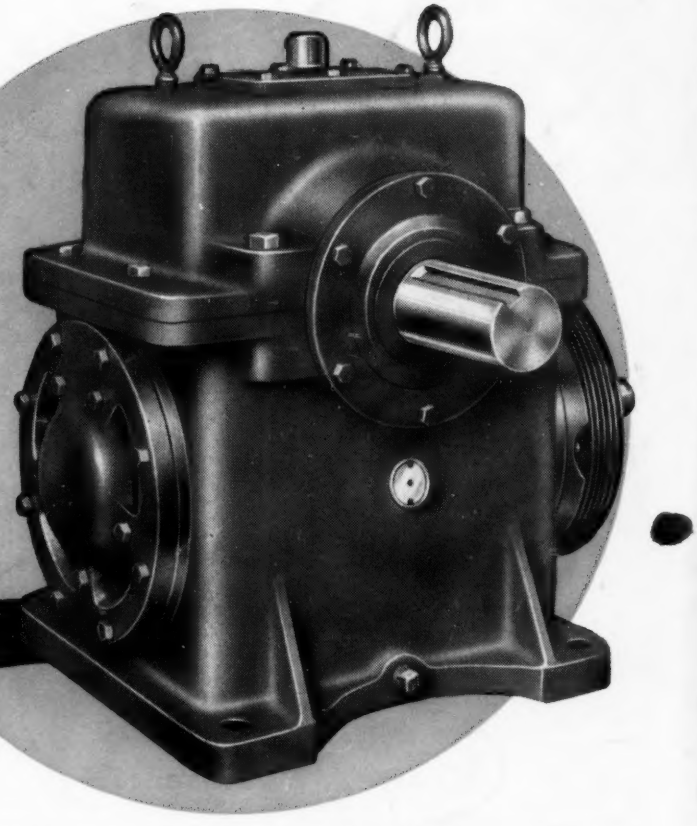
BRANCH OFFICES: CHICAGO 6, 308 W. Washington St.; NEW YORK 17, 101 Park Avenue; CLEVELAND 3, 4900 Euclid Avenue; LOS ANGELES 14, 1709 West 8th St.; BOSTON 16, 126 Newbury Street

SALES REPRESENTATIVES: PORTLAND, ORE., 917 S. W. Oak Street; ST. LOUIS 5, 6625 Delmar; DALLAS, TEXAS, Irwin-Keasler Bldg.; TORONTO, Ontario, Can., 11 King St.

FOOTE BROS.

NEW HYPOWER

enclosed worm gear drives

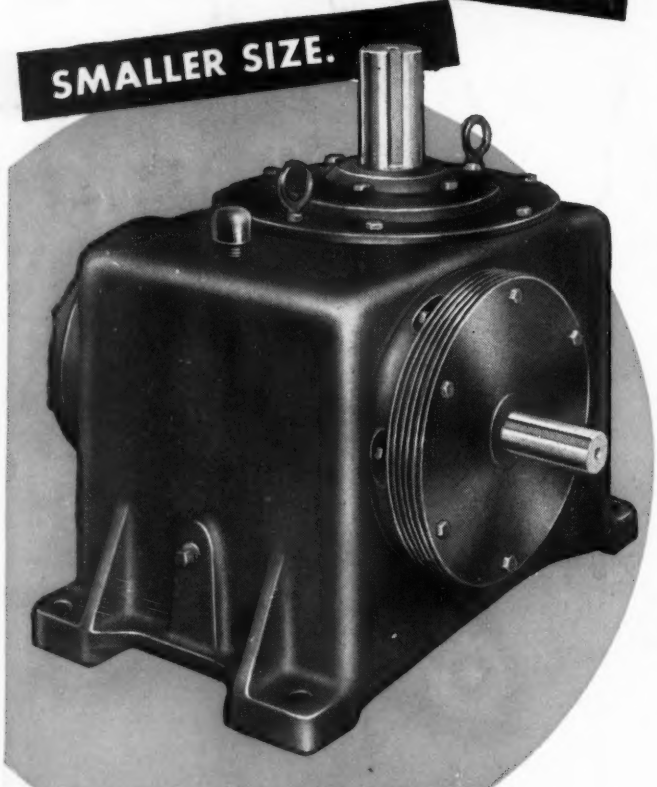


POWER AT LOWER COST...

LESS WEIGHT...

LOWER ORIGINAL COST...

SMALLER SIZE.



New! Foote Bros. Hypower enclosed worm gear drives. Revolutionary in design—superior in performance, they are more economical in original cost, and deliver horsepower at lower cost.

These units are smaller than conventional worm gear reducers and are lighter in weight. Their high capacity permits the use of a smaller reducer than would usually be required.

Among the many features that account for their amazing performance are:

- . . . increased load-carrying capacity accomplished by a revolutionary new technique in generating gears.
- . . . greatly increased thermal capacity. One of the features contributing to this increase is a high velocity air stream through an air channel cylinder having internal radiating fins immersed in the oil bath.
- . . . elimination of oil leakage by use of a new type seal.
- . . . a reduction in size and weight due to new design and improved methods of manufacture.
- . . . increased mechanical capacity achieved through better metallurgical control of materials and improved manufacturing technique.

Foote Bros. Hypower units comply with the speed-ratio standards adopted by the American Gear Manufacturers Association (AGMA), and National Electrical Manufacturers Association (NEMA).

Mail coupon below for bulletin giving complete information on Foote Bros. Hypower enclosed worm gear drives.

FOOTE BROS. GEAR AND MACHINE CORPORATION
Dept. AVW, 4545 S. Western Blvd., Chicago 9, Ill.

FOOTE BROS.

Better Power Transmission Through Better Gears

Foote Bros. Gear and Machine Corporation
Dept. AVW, 4545 S. Western Boulevard
Chicago 9, Illinois

Please send me bulletin HPA on the new Foote Bros. Hypower Enclosed Worm Gear Drives.

Name.....

Company.....

Address.....

City.....*State*.....